

Chinese Customs, to whose kindness he has been indebted for many facilities in carrying on his scientific work.

23. *MUS PYGMÆUS* M.-Edw.

Three skins and five specimens in spirit.

This is the Eastern representative of the European Harvest-mouse. Mr. La Touche's specimens, as also an example from Shanghai sent home by Consul Swinhoe, have tails somewhat longer than Prof. Milne-Edwards gives in his description of *Mus pygmæus*. The same author gives the hind feet as 18 mm. in length. In my notes on the type specimen in the Paris Museum, however, I find that the tail is said to be "doubtfully perfect," and the hind feet are recorded as 13.9 mm., so no doubt 18 is a misprint for 14, a length which quite agrees with what is found in the Kuatun specimens.

24. *MICROTUS MELANOGASTER* M.-Edw.

Ten specimens.

"This appears to be common enough, though I saw only one live specimen, which my little dog routed out of its run in the brushwood near the path leading up to the village."

25. *RHIZOMYS SINENSIS* Gray.

This fine Bamboo-rat seems to be common, as a good number of specimens have been sent home at various times by Messrs. La Touche & Rickett.

"Found in the bamboo plantations, about 3000 feet. Young ones were brought to us in April, and we bought three very young ones alive, but they died after a few days' captivity."

26. *LEPUS SINENSIS* Gray.

Two specimens, presented in 1896.

4. A Revision of the Genera and Species of Fishes of the Family *Mormyridæ*. By G. A. BOULENGER, F.R.S.

[Received November 3, 1898.]

(Plate LI.)

The numerous additions to the freshwater Fish-Fauna of Africa, which it has lately been my good fortune to describe, have necessitated much revision of the work of my predecessors in this department. With no group was this more necessary than with the *Mormyridæ*.

Although a considerable number of genera have been proposed and defined in more or less satisfactory manner by Johannes Müller, Marcusen, Gill, and Bleeker, the tendency has of late been to revert to the view of Valenciennes and to unite all the species under the head *Mormyrus*, with the exception of *Gymnarchus*,

which latter genus has even been raised, without sufficient justification, to family rank. Although naturally adverse to the multiplication of genera, I cannot hesitate, in this case, to restore most of those previously proposed by the above-mentioned authors, and even to add to their number, as I am doing in a publication dealing with the Congo species, which will appear simultaneously with the reading of this paper. I believe that I have succeeded in giving definitions of the genera clear and precise enough to greatly facilitate the study of this highly remarkable family. I can confidently affirm that the genera here admitted are fully equivalent to, and at least as clearly defined as, those universally admitted in the families *Clupeidae*, *Cyprinidae*, and *Characinidae*. The difference between *Mormyrus* and *Hyperopisus*, for instance, is strictly comparable to that between *Albula* and *Bathyrhissa* among the Clupeines; yet, in the same classification (Günther's 'Study of Fishes,' 1880), the two former types are not allowed even the rank of genera, while the two latter are unnecessarily referred to distinct families.

The union of the genus *Mormyrops* with *Mormyrus* can have been suggested only in ignorance of the marked differences in the vertebral column to which attention was first drawn by Hyrtl. The vertebral column shows a greater degree of specialization in the latter than in the former, the posterior præcaudal vertebrae being devoid of those remarkable hæmal bridges to the extremity of which the corresponding ribs are attached, a morphological difference the importance of which would alone justify generic separation. Moreover, as also pointed out by Hyrtl, and since confirmed by Peters and by Fritsch, the *Mormyrops* are true carnivores, like *Gymnarchus*, while the other Mormyrs feed exclusively or mainly on vegetable matter and minute animals.

In the more generalized character of the vertebral column, *Mormyrops* agrees with *Gymnarchus*, and we may regard the latter as an ultra-specialized, anguilliform modification of the former, the other Mormyroids being also modified, but in other directions, from such a type. This conception is supported by a consideration of other characters. Thus I represent to myself the hypothetical primitive type of Mormyr as elongate like an *Albula* (1), with the dorsal (2) and anal (3) fins elongate (basally), large ventral and caudal fins (4), a fairly large mouth (5), and with the præmaxillary (6), parasphenoid (7), and glossohyal (8) bones armed with several rows of small conical teeth. As many as 7 out of these 8 points (1, 2, 3, 4, 5, 7, 8) have been retained by some of the *Mormyrops*, no. 2 in common with *Gymnarchus*; no. 6 has been preserved in one genus only, *Myomyrus*; while it is interesting to observe the interchange in nos. 2 and 3 exhibited by *Mormyrus* and *Hyperopisus*. It is also of importance, as bearing on this question, to note the reduction in the size of the caudal fin that takes place within the genus *Mormyrops*, a feature which may even lead us to speculate on the possible discovery of forms that would fill the gap now existing between the Mormyrs with well-developed homocercal tail and the *Gymnarchus*, in which,

concurrently with the loss of the ventral and anal fins, the caudal fin has been suppressed, the tail terminating in a free, irregularly segmented, calcified notochordal filament.

Although I have not at present sufficient osteological material at my command to undertake a thorough study of the skeletons from a systematic point of view, such characters as I have been able to observe, on the skeletons of one or two species of each of the genera and with the aid of the Röntgen rays, through the kind assistance of Messrs. J. H. Gardiner and J. Green, show that the generic definitions will be materially strengthened when the number of vertebræ can be recorded; this I have therefore now attempted, perhaps somewhat prematurely, considering the comparatively small number of species examined in that respect. In most of the genera, the vertebral column must be divided into three principal regions:—1. The præcaudal proper; 2. An intermediate region with strongly developed ribs attached to closed hæmal arches, under which the posterior portion of the air-bladder extends; 3. The caudal proper. The second region does not exist in *Mormyrops*, *Isichthys*, *Stomatorhinus*, and *Gymnarchus*. I have ascertained the number of vertebræ in 15 species belonging to the 11 genera defined below:—

<i>Mormyrops anguilloides</i> . . . . .	24 + 37 = 61.
„ <i>zanclostris</i> . . . . .	22 + 34 = 56.
<i>Petrocephalus bane</i> . . . . .	9 + 4 + 29 = 42.
<i>Isichthys henryi</i> . . . . .	26 + 38 = 64.
<i>Marcusenius discorhynchus</i> . . . . .	9 + 5 + 27 = 41.
„ <i>plagiostoma</i> . . . . .	12 + 4 + 30 = 46.
„ <i>wilverthi</i> . . . . .	12 + 5 + 27 = 44.
<i>Stomatorhinus microps</i> . . . . .	14 + 25 = 39.
<i>Myomyrus macrodon</i> . . . . .	14 + 4 + 32 = 50.
<i>Gnathonemus tamandua</i> . . . . .	12 + 6 + 27 = 45.
„ <i>rhynchophorus</i> . . . . .	13 + 4 + 30 = 47.
<i>Mormyrus kannume</i> . . . . .	13 + 7 + 30 = 50.
<i>Hyperopisus bebe</i> . . . . .	15 + 6 + 38 = 59.
<i>Genyomyrus donnyi</i> . . . . .	13 + 7 + 29 = 49.
<i>Gymnarchus niloticus</i> . . . . .	45 + 75 = 120.

That the numbers vary within certain limits need hardly be added, but so far little has been done in this line of investigation, except by Hyrtl, who has supplied information on the following species:—

<i>Mormyrops anguilloides</i> . . . . .	23 + 36 = 59.
„ <i>deliciosus</i> ( <i>zambanenje</i> ) . . . . .	23 + 39 = 62.
<i>Petrocephalus bane</i> . . . . .	9 + 6 + 27 = 42.
<i>Gnathonemus cyprinoides</i> . . . . .	13 + 8 + 27 = 48.
<i>Mormyrus caschive</i> . . . . .	12 + 7 + 30 = 49.
„ <i>kannume</i> . . . . .	13 + 10 + 31 = 54.
<i>Hyperopisus bebe</i> . . . . .	16 + 4 + 35 = 55.
<i>Gymnarchus niloticus</i> . . . . .	47 + 67 = 114.

These results have been utilized in drawing up the generic diagnoses.

The sciagraph of *Gnathonemus rhynchophorus*, which is appended to this paper, shows well the three regions into which the vertebral column may be divided, and also the so-called Gemmingerian bones running parallel to the axis, dorsally to the neural spines, and ventrally to the hæmal spines in that portion of the caudal region which is occupied by the electric organ. These curious ossifications, discovered by Gemminger, have been shown by Hyrtl to be a universal character of the *Mormyridæ*, though not directly related to the electric organ.

By a curious oversight, the *Mormyridæ* have been referred by Jordan and Evermann (Fish. N. Amer. i. 1896, p. 114) as an Order (*Scyphophori*, Cope) to the group *Ostariophysii*, Sagemehl, embracing the *Siluridæ*, *Gymnotidæ*, *Cyprinidæ*, and *Characinidæ*, which agree in the co-ossification of the anterior vertebræ and the connection of the air-bladder with the ear through the Weberian ossicles. Such a character is well known not to exist in the Mormyrs, which would fall under their definition of the order *Isospondyli*, Cope, but for the absence of the symplectic bone. The nearest allies of the Mormyrs, giving an idea of the more generalized type from which they may have been derived, appear to me to be found in the *Albulidæ*, as suggested by Valenciennes in 1846. These possible ancestors of the Mormyrs belong to the most generalized forms of Clupeines, *i. e.* those most affine to the Amioid Ganoids, having retained the muscular *conus arteriosus* with two rows of valves, as first shown by Stannius in 1846; whilst the nearly related lowly Clupeines, the *Chirocentridæ* and the *Elopidæ*, are unique in the retention of two other 'Ganoid' characters, *viz.*, the spiral fold of the intestine in the former, and the gular plate in the latter.

The family *Mormyridæ* may be defined as Isospondylous Physostomes with coalesced præmaxillary bones, parietals separating the frontals from the supraoccipital<sup>1</sup>; with a cavity on each side of the parietals leading into the interior of the skull and covered with a thin lid-like bone, with the subopercular small, if present, and without symplectic bone<sup>2</sup>. Opercular bones concealed under the skin; gill-clefts narrow.

These Fishes, of which 73 species are described in this paper, are restricted to the fresh waters of Africa, from the Nile and Senegal to Angola, Lake Ngami, and the Zambesi. The Congo has yielded more species than any other river, *viz.* 34.

A great deal has been published on their anatomy and physiology; the principal contributions are recorded below. Unfortunately nothing as yet has been observed on their breeding-habits and development, and we do not know whether the young pass through

<sup>1</sup> Günther's statement (Cat. vi. p. 214) "Single parietal bone" can only be accounted for by a mis-rendering of Valenciennes's description (xix. p. 234): "En arrière des frontaux nous voyons deux petits pariétaux se toucher, comme dans les carpes et comme dans les aloses, pour former une espèce de plaque impaire sur la route du crâne."

<sup>2</sup> In the two latter points they agree with the Siluroids, to which they bear, however, no relationship.



a larval stage, analogous to that of the *Muraenidæ*, as ascertained by C. H. Gilbert to be normal in *Albula*, which, as stated above, may be considered as the nearest ally of the *Mormyridæ*.

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*Synopsis of the Genera.*

- I. Ventral, anal, and caudal fins present; teeth on the parasphenoid and on the tongue.
- A. A single series of teeth in each jaw.
1. 12 or more teeth in each jaw.  
Mouth terminal or subinferior, anterior to the vertical of the eyes; body elongate; anal longer than dorsal; nostrils moderately far apart, remote from the eye ..... 1. *Mormyrops* J. Müll.
- Mouth inferior, below the eye; body short; nostrils close together, close to the eye..... 2. *Petrocephalus* Marc.
2. No more than 10 teeth in each jaw.
- a. Palatal and lingual teeth minute, conical.
- a. Mouth inferior or subinferior, below the level of the eyes.
- \* Body much elongate, eel-like; ventrals nearer anal than pectorals ..... 3. *Isichthys* Gill.
- \*\* Body short or moderately elongate; ventrals equally distant from pectorals and from anal, or nearer the former.
- Teeth small, truncate or notched; posterior nostril remote from the mouth ..... 4. *Marcusenius* Gill.
- Teeth small, bicuspid; posterior (lower) nostril close to the mouth ..... 5. *Stomatorhinus* Blgr.
- Upper teeth small, conical; mandibular teeth compressed, median pair very large, incisor-like; nostrils close together ..... 6. *Myomyrus* Blgr.
- β. Mouth terminal.
- Dorsal and anal not very unequal in length ..... 7. *Gnathonemus* Gill.
- Dorsal at least  $2\frac{2}{3}$  as long as anal ..... 8. *Mormyrus* L.
- b. Palate and tongue with a pavement of large spheroid teeth; dorsal short, anal very long ..... 9. *Hyperopisus* Gill.
- B. Teeth in the jaws disposed in several rows forming villiform bands; dorsal and anal nearly equally developed ..... 10. *Genyomyrus* Blgr.
- II. Ventral, anal, and caudal fins absent; body eel-like; palate and tongue toothless ..... 11. *Gymnarchus* Cuv.

## 1. MORMYROPS.

*Mormyrus*, part., Linn. Syst. Nat. i. p. 522 (1766).

*Mormyrops*, part., J. Müller, Arch. f. Nat. 1843, p. 324; Günth. Cat. vi. p. 223 (1866).

*Mormyrops*, Gill, Proc. Ac. Philad. 1862, p. 139; Peters, Reise n. Mossamb. iv. p. 88 (1868); Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 2.

*Oxymormyrus*, Bleek. Versl. Ak. Amsterd. (2) viii. 1874, p. 367.

Teeth in the jaws conical, truncate, or notched, forming a single complete series on the entire edge of both jaws (12-36 in each); minute conical teeth on the parasphenoid and on the tongue;

mouth terminal or subinferior. Nostrils moderately far apart, remote from the eye. Body more or less elongate; ventrals equally distant from pectorals and from anal, or nearer the former. Anal longer than dorsal. Vertebræ 56-62 (22-24 + 34-39).

*Synopsis of the Species.*

- I. Caudal peduncle 2 to  $2\frac{1}{2}$  as long as deep,  $\frac{1}{3}$  to  $\frac{1}{2}$  length of head.
- A. 20-36 teeth in each jaw; head at least nearly twice as long as deep; lat. l. 85-96.
- D. 21-27; A. 41-51; 16-18 scales round caudal peduncle; depth of body 5-6 times in total length; head nearly twice as long as deep ..... 1. *deliciosus* Leach.
- D. 26-28; A. 39-42; 20 scales round caudal peduncle; depth of body 5-6 $\frac{1}{2}$  times in total length; head nearly twice as long as deep ..... 2. *anguilloides* L.
- D. 26; A. 39; depth of body 7 times in total length; head more than twice as long as deep ... 3. *longiceps* Gthr.
- D. 26; A. 43; depth of body 7 $\frac{2}{3}$  times in total length; head nearly twice as long as deep ..... 4. *breviceps* Sldr.
- B. 12-16 teeth in each jaw.
1. Dorsal 19-21.
- Snout much produced, tubiform, straight; head  $2\frac{1}{2}$ - $2\frac{3}{4}$  as long as deep. Anal 36-39; lat. l. 70-74... 5. *zanclirostris* Gthr.
- Snout short; head twice as long as deep. Anal 35-37; lat. l. 80-93 ..... 6. *engystoma* Blgr.
2. Dorsal 30; snout short; head not twice as long as deep.
- A. 40, originating a little in advance of dorsal, and slightly nearer head than base of caudal ... 7. *masuvianus* Blgr.
- A. 47, originating considerably in advance of dorsal, and at nearly equal distance from end of snout and base of caudal ..... 8. *sirenoides* Blgr.
- II. Caudal peduncle not longer than deep,  $\frac{1}{3}$ - $\frac{1}{2}$  length of head; 12-16 teeth in each jaw.
- D. 29; A. 48; lat. l. 80; depth of body 6 times in total length ..... 9. *lineolatus* Blgr.
- D. 34-37; A. 50-59; lat. l. 100-105; depth of body  $5\frac{1}{2}$ - $6\frac{1}{2}$  times in total length ..... 10. *marix* Schilth.
- D. 45; A. 70; lat. l. 102; depth of body a little more than 6 times in total length ..... 11. *microstoma* Blgr.
- D. 43; A. 63; lat. l. 95; depth of body  $8\frac{1}{2}$  times in total length ..... 12. *attenuatus* Blgr.

1. MORMYRUPS DELICIOSUS.

*Oxyrhynchus deliciosus*, Leach, in Tuckey, Exped. R. Zaire, p. 410 (1818).

*Mormyrus tuckeyi*, Cuv. & Val. xix. p. 263 (1846).

*Mormyrus zambanenje*, Peters, Mon. Berl. Ac. 1852, p. 275  
Günth. Proc. Zool. Soc. 1896, p. 224.

*Mormyrops tuckeyi*, Marcusen, Bull. Ac. St. Pétersb. xii. 1854, p. 14.

*Mormyrops deliciosus*, Günth. Cat. vi. p. 224 (1866); Steind. Sitzb. Ak. Wien, lxi. i. 1870, p. 555, pl. v. fig. 1; Perugia, Ann.

Mus. Genova, (2) x. 1892, p. 976; Steind. Notes Leyd. Mus. xvi. 1894, p. 65.

*Mormyrops zambanenje*, Günth. l. c.

*Mormyrus (Mormyrops) zambanenje*, Peters, Reise n. Mossamb. iv. p. 88, pl. xv. fig. (1868).

*Mormyrus (Mormyrops) swanenburgi*, Schilthuis, Tijds. Nederl. Dierk. Ver. (2) iii. 1891, p. 91.

Depth of body 5 to 6 times in total length, length of head  $3\frac{1}{2}$  to  $4\frac{1}{4}$ . Head nearly twice as long as deep, upper profile slightly concave; snout rounded; jaws equal; width of mouth nearly equal to length of snout; teeth truncate or conical in the adult, more or less distinctly notched in the young, 24 to 35 in each jaw; eye small, situated in the anterior third of the head, its diameter 2 (young) to 4 times in length of snout, 2 to 3 times in interorbital width. Dorsal 21-27,  $\frac{1}{2}$  length of anal or a little more, originating 2 to  $2\frac{1}{2}$  as far from the end of the snout as from the base of the caudal. Anal 41-51, originating considerably in advance of dorsal (its 12th to 16th ray corresponding to the first dorsal ray), and a little nearer head than root of caudal. Pectoral  $\frac{2}{5}$  to  $\frac{1}{2}$  length of head, ventral  $\frac{1}{4}$  to  $\frac{1}{3}$ . Caudal rather small, densely scaled, with rounded lobes. Caudal peduncle twice as long as deep,  $\frac{1}{3}$  to  $\frac{2}{5}$  length of head. 85-96 scales in the lateral line,  $\frac{15-17}{20-22}$  in a transverse line on the body, 23-26 in a transverse line between dorsal and anal, 16 or 18 round caudal peduncle. Olive above, silvery beneath.

Total length 1230 millim.

Senegal, Congo, Zambezi, L. Nyassa, Webi Shebeli and Juba.

## 2. MORMYRUPS ANGUILLOIDES.

*Mormyrus anguilloides*, Linn. Mus. Ad. Frid. ii. p. 110 (1764), and S. N. i. p. 522 (1766); Geoffr. Descr. Égypte, Poiss. p. 274, pl. vii. fig. 2 (1829); Cuv. & Val. xix. p. 258 (1846); Marcusen, Mém. Ac. St. Pétersb. (7) vii. 1864, no. 4, p. 132.

*Mormyrus dendera*, Lacép. Hist. Poiss. v. p. 621 (1803).

*Mormyrops anguilloides*, Marcusen, Bull. Ac. St. Pétersb. xii. 1854, p. 14; Günth. Cat. vi. p. 223 (1866).

*Marcusenius anguilloides*, Gill, Proc. Ac. Philad. 1862, p. 444.

Depth of body 5 to  $6\frac{1}{2}$  times in total length, length of head 4. Head nearly twice as long as deep, upper profile slightly concave; snout rounded, the upper jaw a little longer than the lower; width of mouth less than length of snout; teeth more or less distinctly notched, 22 or 24 in each jaw; eye small, situated in the anterior third of the head, its diameter  $2\frac{1}{2}$  in length of snout, 2 in interorbital width. Dorsal 26-28,  $\frac{2}{5}$  length of anal, originating twice as far from the end of the snout as from the base of the caudal. Anal 39-42, originating considerably in advance of the dorsal (its 10th or 11th ray corresponding to the first dorsal ray), and at equal distance from head and root of caudal. Pectoral nearly  $\frac{1}{2}$  length of head, ventral  $\frac{1}{3}$ . Caudal rather small, scaled at the



base, with rounded lobes. Caudal peduncle twice as long as deep,  $\frac{1}{2}$  length of head. 93-95 scales in the lateral line,  $\frac{16}{22-24}$  in a transverse line on the body, 25-27 in a transverse line between dorsal and anal, 20 round caudal peduncle. Olive above, bluish white beneath.

Nile.

### 3. MORMYROPS LONGICEPS.

*Mormyrops longiceps*, Günth. Ann. & Mag. N. H. (3) xx. 1867, p. 117.

Depth of body 7 times in total length, length of head 4. Head very low and elongate, more than twice as long as deep; upper jaw somewhat longer than the lower; teeth truncate and notched at the apex,  $\frac{2}{3}\frac{4}{2}$ ; eye very small, situated in the anterior third of the head. Dorsal 26, more than half as long as anal. Anal 39. Lat. l. 90. Coloration uniform.

Total length 280 millim.

Bossumprah River, Gold Coast.—The type specimen, which should be in the Liverpool Museum, could not be found by Dr. H. O. Forbes, to whom I applied for information respecting it.

### 4. MORMYROPS BREVICEPS.

*Mormyrops breviceps*, Steind. Notes Leyd. Mus. xvi. 1894, p. 66, pl. i. fig. 2.

Depth of body  $7\frac{2}{3}$  times in total length, length of head  $5\frac{1}{2}$ . Head nearly twice as long as deep, upper profile slightly concave; snout rounded, the upper jaw a little longer than the lower; teeth truncate or slightly notched, 20 in each jaw; eye small, its diameter 2 in length of snout. Dorsal 26,  $\frac{2}{5}$  length of anal, originating considerably nearer base of caudal than head. Anal 43, originating considerably in advance of dorsal (its 13th ray corresponding to the first dorsal ray), and a little nearer head than base of caudal. Pectoral a little more than  $\frac{1}{2}$  length of head, ventral  $\frac{1}{3}$ . Caudal rather small, with rounded lobes. Caudal peduncle  $2\frac{1}{2}$  as long as deep,  $\frac{2}{3}$  length of head. 90 scales in the lateral line.

Total length 355 millim.

St. Paul R., Liberia.—Type in Leyden Museum.

### 5. MORMYROPS ZANCLIROSTRIS.

*Mormyrus zanclirostris*, Günth. Ann. & Mag. N. H. (3) xx. 1867, p. 114, pl. ii. fig. B.

*Mormyrops zanclirostris*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 3.

Depth of body  $6\frac{1}{2}$  to 7 times in total length, length of head  $3\frac{1}{2}$  to 4 times. Head  $2\frac{1}{2}$  to  $2\frac{3}{4}$  as long as deep; snout much produced, tubiform, nearly as long as postorbital part of head; mouth terminal, very small; teeth truncate, 14 in each jaw; eye very small, situated in the anterior half of the head, its diameter  $\frac{1}{2}$  to  $\frac{2}{3}$  interorbital width. Dorsal 20-21,  $\frac{1}{2}$  length of anal, originating 3 to  $3\frac{1}{2}$

times as far from the head as from the base of the caudal. Anal 36-39, originating considerably in advance of dorsal (its 12th to 14th ray corresponding to the first dorsal ray), and at nearly equal distance from head and base of caudal. Pectoral  $\frac{2}{5}$  length of head, ventral  $\frac{1}{4}$ . Caudal small, densely scaled in its basal half, with rounded lobes. Caudal peduncle twice as long as deep,  $\frac{1}{3}$  length of head. 70-74 scales in the lateral line,  $\frac{9-10}{14-16}$  in a transverse line on the body, 14 or 15 in a transverse line between dorsal and anal, 12 round caudal peduncle. Dark brown.

Total length 270 millim.

Gaboon, Ogowe.

#### 6. MORMYROPS ENGYSTOMA.

*Mormyrops engystoma*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 3, pl. i. fig. 1.

Depth of body 7 to  $7\frac{1}{2}$  times in total length, length of head  $4\frac{1}{2}$  to 5. Head nearly twice as long as deep, with straight declivous upper profile; snout rounded, projecting a little beyond the mouth; width of mouth hardly  $\frac{2}{3}$  length of snout; teeth notched, 12 in each jaw; eye very small, situated in the anterior third of the head, its diameter 3 times in length of snout,  $2\frac{1}{2}$  to 3 times in interorbital width. Dorsal 19-20,  $\frac{1}{2}$  length of anal, originating twice as far from the end of the snout as from the base of the caudal. Anal 35-37, originating considerably in advance of dorsal (its 9th ray corresponding to the first dorsal ray), and equally distant from head and base of caudal. Pectoral  $\frac{3}{5}$  length of head, ventral  $\frac{2}{5}$ . Caudal rather small, scaled at the base, with rounded lobes. Caudal peduncle 2 to  $2\frac{1}{2}$  as long as deep,  $\frac{1}{2}$  to  $\frac{3}{5}$  length of head. 80-93 scales in the lateral line,  $\frac{12-13}{20-22}$  in a transverse line on the body, 18-19 in a transverse line between dorsal and anal, 16 round caudal peduncle. Pale brown, speckled with darker.

Total length 145 millim.

Lower Congo.

#### 7. MORMYROPS MASUIANUS.

*Mormyrops masuianus*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 4, pl. ii. fig. 1.

Depth of body 6 times in total length, length of head  $4\frac{2}{3}$ . Head  $1\frac{2}{3}$  as long as deep, with straight, declivous upper profile; snout rounded, projecting a little beyond the mouth; width of mouth a little greater than length of snout; teeth truncate, 12 in the upper jaw, 14 in the lower; eye very small, situated in the anterior third of the head, its diameter 3 times in length of snout or interorbital width. Dorsal 30,  $\frac{4}{5}$  length of anal, originating  $1\frac{2}{3}$  as far from the end of the snout as from the base of the caudal. Anal 40, originating a little in advance of dorsal (its 7th ray corresponding to the first dorsal ray), and slightly nearer head than base of caudal. Pectoral  $\frac{1}{2}$  length of head, ventral  $\frac{1}{3}$ . Caudal rather small, densely scaled, with rounded lobes. Caudal

peduncle  $2\frac{1}{2}$  as long as deep,  $\frac{1}{2}$  length of head. 93 scales in the lateral line,  $\frac{14}{20}$  in a transverse line on the body, 21 in a transverse line between dorsal and anal, 18 round caudal peduncle. Pale brownish.

Total length 410 millim.

Upper Congo.

#### 8. MORMYROPS SIRENOIDES.

*Mormyrops sirenoides*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 4, pl. i. fig. 2.

Depth of body 7 times in total length, length of head 6. Head  $1\frac{1}{2}$  as long as deep, with straight, declivous upper profile; snout rounded, projecting a little beyond the mouth; width of mouth greater than length of snout; teeth truncate, 12 in each jaw; eye very small, situated in the anterior third of the head, its diameter 3 times in length of snout, 4 times in interorbital width. Dorsal 30,  $\frac{2}{3}$  length of anal, originating  $1\frac{1}{2}$  as far from the end of the snout as from the base of the caudal. Anal 47, originating considerably in advance of dorsal (its 14th ray corresponding to the first dorsal ray), and at nearly equal distance from end of snout and root of caudal. Pectoral a little more than  $\frac{1}{2}$  length of head, ventral  $\frac{1}{3}$ . Caudal small, densely scaled, with rounded lobes. Caudal peduncle  $2\frac{1}{2}$  as long as deep,  $\frac{1}{2}$  length of head. 90 scales in the lateral line,  $\frac{12}{19}$  in a transverse line on the body, 20 in a transverse line between dorsal and anal, 18 round caudal peduncle. Uniform dark brown, somewhat lighter beneath.

Total length 630 millim.

Upper Congo.

#### 9. MORMYROPS LINEOLATUS.

*Mormyrops lineolatus*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 5, pl. ii. fig. 2.

Depth of body 6 times in total length, length of head nearly 5 times. Head  $1\frac{3}{4}$  as long as deep, upper profile slightly concave; snout rounded; jaws equal; width of mouth nearly equal to length of snout; teeth truncate, 16 in each jaw; eye very small, situated in the anterior third of the head, its diameter 3 times in length of snout,  $2\frac{1}{2}$  in interorbital width. Dorsal 29,  $\frac{2}{5}$  length of anal, originating  $1\frac{2}{3}$  as far from the end of the snout as from the base of the caudal. Anal 48, originating considerably in advance of dorsal (the 11th ray corresponding to the first dorsal ray), and a little nearer head than root of caudal. Pectoral  $\frac{1}{2}$  length of head, ventral not quite  $\frac{1}{3}$ . Caudal small, densely scaled, with rounded lobes. Caudal peduncle as long as deep,  $\frac{1}{5}$  length of head. 80 scales in the lateral line,  $\frac{16}{20}$  in a transverse line on the body, 23 in a transverse line between dorsal and anal, 16 round caudal peduncle. Pale brown, with dark lines along the series of scales.

Total length 400 millim.

Upper Congo.

## 10. MORMYROPS MARIE.

*Mormyrus (Mormyrops) marie*, Schilthuis, Tijdschr. Ned. Dierk. Ver. (2) iii. 1891, p. 92.

*Mormyrops marie*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 3.

Depth of body  $5\frac{1}{2}$  to  $6\frac{1}{2}$  times in total length, length of head 4 to 5 times. Head nearly twice as long as deep, with slightly concave upper profile; snout rounded, jaws equal; width of mouth a little less than length of snout; teeth truncate, 14 or 16 in each jaw; eye very small, situated in the anterior third of the head, its diameter 3 or 4 times in length of snout,  $2\frac{1}{2}$  to  $3\frac{1}{2}$  times in interorbital width. Dorsal 34-37,  $\frac{3}{4}$  to  $\frac{4}{5}$  length of anal, originating at equal distance from the head and the base of the caudal, or a little nearer the latter. Anal 50-59, originating in advance of dorsal (its 8th or 9th ray corresponding to the first dorsal ray), and much nearer base of caudal than end of snout. Pectoral  $\frac{1}{2}$  length of head, ventral  $\frac{1}{3}$  to  $\frac{2}{5}$ . Caudal very small, scaled at the base, with rounded lobes. Caudal peduncle not longer than deep,  $\frac{1}{5}$  to  $\frac{1}{6}$  length of head. 100-105 scales in the lateral line,  $\frac{18-20}{26-30}$  in a transverse line on the body, 28-31 in a transverse line between dorsal and anal, 22-24 round caudal peduncle. Whitish, uniform or finely speckled with brown.

Total length 300 millim.

Lower Congo.

## 11. MORMYROPS MICROSTOMA.

*Mormyrops microstoma*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 6, pl. i. fig. 3.

Depth of body  $6\frac{1}{3}$  times in total length, length of head  $4\frac{2}{3}$ . Head twice as long as deep, with straight upper profile; snout rounded, projecting beyond the mouth; width of mouth  $\frac{2}{3}$  length of snout; teeth truncate, 14 in each jaw; eye moderate, its diameter  $1\frac{1}{2}$  in length of snout, 2 in interorbital width. Dorsal 45, nearly  $\frac{3}{4}$  length of anal, originating nearly twice as far from the end of the snout as from the base of the caudal. Anal 70, originating considerably in advance of dorsal (its 17th ray corresponding to the first dorsal ray), and nearer the head than base of caudal. Pectoral  $\frac{1}{2}$  length of head, ventral nearly  $\frac{1}{3}$ . Caudal very small, scaled at the base, with rounded lobes. Caudal peduncle hardly as long as deep,  $\frac{1}{6}$  length of head. 102 scales in the lateral line,  $\frac{12}{15}$  in a transverse line on the body, 16 in a transverse line between dorsal and anal, 14 round caudal peduncle. Blackish brown.

Total length 165 millim.

Upper Congo.

## 12. MORMYROPS ATTENUATUS.

*Mormyrops attenuatus*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 6, pl. i. fig. 4.

Depth of body  $8\frac{1}{2}$  times in total length, length of head  $6\frac{1}{2}$ .



Head nearly twice as long as deep, upper profile straight, declivous; snout rounded, projecting a little beyond the mouth; width of mouth  $\frac{2}{3}$  length of snout; teeth truncate, 12 in the upper jaw, 14 in the lower; eye small, situated in the anterior third of the head, its diameter  $2\frac{1}{2}$  times in length of snout or interorbital width. Dorsal 43,  $\frac{3}{4}$  length of anal, originating a little nearer base of caudal than head. Anal 63, originating considerably in advance of dorsal (its 14th ray corresponding to the first dorsal ray), and at equal distance from end of snout and base of caudal. Pectoral a little more than  $\frac{1}{2}$  length of head, ventral nearly  $\frac{2}{5}$ . Caudal very small, scaled at the base, with rounded lobes. Caudal peduncle hardly as long as deep,  $\frac{1}{6}$  length of head. 95 scales in the lateral line,  $\frac{12}{17}$  in a transverse line on the body, 18 in a transverse line between dorsal and anal, 16 round caudal peduncle. Whitish, finely speckled with brown.

Total length 410 millim.

Upper Congo.

## 2. PETROCEPHALUS.

*Petrocephalus*, part., Marcusen, Bull. Ac. St. Pétersb. xii. 1854, p. 14, and Mém. Ac. St. Pétersb. (7) vii. 1864, no. 4, p. 111.

*Petrocephalus*, Gill, Proc. Ac. Philad. 1862, p. 443 (1863); Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 2.

Teeth in the jaws bicuspid, forming a single complete series on the entire edge of both jaws (10-24 in the upper jaw, 18-36 in the lower); minute conical teeth on the parasphenoid and on the tongue; mouth inferior, situated below the eyes. Nostrils close together, close to the eye. Body short; ventrals nearer pectorals than anal. Dorsal and anal not very unequal in length. Vertebrae 42 (9 + 4-6 + 27-29).

### *Synopsis of the Species.*

- I. Dorsal 29-33; Anal 33-37; 12 scales round caudal peduncle; lat. l. 40-50.
- Width of mouth  $\frac{1}{2}$ - $\frac{1}{3}$  length of head; caudal peduncle  $\frac{3}{4}$ - $\frac{1}{2}$  length of head ..... 1. *bane* Lacép.
- Width of mouth  $\frac{2}{3}$  length of head; caudal peduncle  $\frac{2}{3}$ - $\frac{2}{5}$  length of head ..... 2. *sauvaggi* Blgr.
- II. Dorsal 20-28.
- A. 10 or 12 scales round caudal peduncle.
- D. 20-25; A. 31-33; lat. l. 39-40 ..... 3. *bovei* C. & V.
- D. 21-24; A. 28-30; lat. l. 37;  $\frac{7}{8}$  scales in a series between dorsal and anal; caudal peduncle  $2\frac{1}{2}$ -3 times as long as deep ..... 4. *balayi* Sauv.
- D. 24-28; A. 30-33; lat. l. 38-42;  $\frac{11-13}{11-12}$  scales in a series between dorsal and anal; caudal peduncle 3 times as long as deep ..... 5. *simus* Sauv.
- D. 27; A. 29; lat. l. 40;  $\frac{12}{14}$  scales in a series between dorsal and anal; caudal peduncle  $2\frac{1}{2}$  as long as deep. 6. *gliroides* Vincig.
- B. 16 scales round caudal peduncle.
- D. 20-22; A. 25-29; lat. l. 37-40 ..... 7. *catostoma* Gthr.

## 1. PETROCEPHALUS BANE.

*Mormyrus bane*, Lacép. Hist. Poiss. v. p. 620 (1803); Cuv. & Val. xix. p. 276 (1846); Günth. Cat. vi. p. 220 (1866).

*Mormyrus cyprinoides* (non L.), Geoffr. Descr. Égypte, Poiss. p. 277, pl. viii. figs. 3 & 4 (1829).

*Mormyrus dequesne*, Cuv. & Val. t. c. p. 281.

? *Mormyrus joannisii*, Cuv. & Val. t. c. p. 282.

*Mormyrus ehrenbergii*, Cuv. & Val. t. c. p. 283.

*Petrocephalus bane*, Marcusen, Bull. Ac. St. Pétersb. xii. 1854, p. 14, and Mém. Ac. St. Pétersb. (7) vii. 1864, no. 4, p. 146.

*Petrocephalus dequesne*, Marcusen, Bull. p. 14.

? *Petrocephalus de joannis*, Marcusen, l. c.

*Petrocephalus ehrenbergii*, Marcusen, l. c.

Depth of body  $2\frac{1}{2}$  to  $3\frac{1}{3}$  times in total length, length of head  $3\frac{3}{4}$  to 4. Head as long as deep, rounded; snout very short,  $\frac{1}{8}$  to  $\frac{1}{5}$  length of head, rounded, projecting beyond the mouth; mouth situated below the eye, its width  $\frac{1}{5}$  to  $\frac{1}{4}$  length of head; teeth bicuspid, 14–22 in the upper jaw, 22–30 in the lower; nostrils close together, close to the eye and on a level with its lower border; eye large, longer than the snout, at least  $\frac{2}{3}$  interorbital width. Dorsal 29–33, originating above 6th to 10th ray of anal, its length  $1\frac{2}{3}$  to 2 in its distance from head. Anal 34–37, equally distant from base of ventral and from base of caudal. Pectoral pointed,  $\frac{4}{5}$  length of head, twice as long as ventral, and extending beyond base of latter. Caudal with pointed lobes. Caudal peduncle  $2\frac{1}{2}$  to 3 times as long as deep,  $\frac{3}{4}$  to  $\frac{4}{5}$  length of head. 40–50 scales in the lateral line,  $\frac{10-11}{13-16}$  in a transverse line on the body,  $\frac{11-14}{12-13}$  in a transverse line between dorsal and anal, 12 round caudal peduncle. Silvery, greyish on the back.

Total length 195 millim.

Nile.

## 2. PETROCEPHALUS SAUVAGII.

*Mormyrus (Petrocephalus) sauvagii*, Bouleng. Ann. & Mag. N. H. (5) xix. 1887, p. 149.

Depth of body 3 to  $3\frac{1}{2}$  times in total length, length of head  $3\frac{2}{3}$  to 4. Head as long as deep, with straight, descending upper profile; snout very short,  $\frac{1}{8}$  to  $\frac{1}{5}$  length of head, obliquely truncate, projecting beyond the mouth; mouth situated below the anterior border of the eye, its width  $\frac{2}{7}$  length of head; teeth bicuspid, 20–24 in the upper jaw, 28–30 in the lower; nostrils close together, close to the eye; eye large, its diameter greater than length of snout, nearly equal to interorbital width. Dorsal 29–31, originating above 4th or 5th ray of anal, its length a little more than half its distance from head. Anal 35–36, equally distant from base of ventral and base of caudal, or slightly nearer latter. Pectoral pointed, about  $\frac{2}{3}$  length of head, twice as long as ventral, and extending beyond base of latter. Caudal scaled at the base, with pointed lobes. Caudal peduncle 3 times as long as deep,  $\frac{3}{5}$  to  $\frac{2}{3}$

length of head. 40–46 scales in the lateral line,  $\frac{10-11}{13-14}$  in a transverse line on the body,  $\frac{10-11}{10-12}$  in a transverse line between dorsal and anal, 12 round caudal peduncle. Plumbeous above.

Total length 190 millim.

Lower Congo, Old Calabar.

### 3. PETROCEPHALUS BOVEI.

*Mormyrus bovei*, Cuv. & Val. xix. p. 283 (1846); Günth. Cat. vi. p. 221 (1866); Steind. Sitzb. Ak. Wien, lxi. i. 1870, p. 553.

*Petrocephalus bovei*, Marcusen, Bull. Ac. St. Pétersb. xii. 1854, p. 14.

Shape of head and body as in *M. bane*; depth of body about  $3\frac{1}{2}$  times in total length. Dorsal 20–25; anal 31–33. 39–40 scales in the lateral line.

Nile, Senegal.—This species is only known to me from the accounts given by Valenciennes and by Steindachner.

### 4. PETROCEPHALUS BALAYI.

*Petrocephalus balayi*, Sauvage, Bull. Soc. Philom. (7) vii. 1883, p. 159.

*Mormyrus amblystoma*, Günth. Ann. & Mag. N. H. (6) xvii. 1896, p. 281, pl. xiv. fig. A.

Depth of body  $2\frac{3}{5}$  times in total length, length of head  $3\frac{2}{3}$ . Head as long as deep, with convex upper profile; snout very short,  $\frac{1}{5}$  length of head, obliquely truncate, projecting beyond the mouth; mouth situated below anterior border or centre of eye, its width  $\frac{1}{3}$  length of head; teeth bicuspid, 20–24 in the upper jaw, 30–36 in the lower; nostrils close together, close to the eye; eye large, its diameter greater than length of snout,  $\frac{2}{3}$  interorbital width. Dorsal 21–24, originating above 4th or 5th ray of anal, its length nearly  $\frac{1}{2}$  its distance from head. Anal 28–30, slightly nearer base of caudal than base of ventral. Pectoral pointed,  $\frac{2}{3}$  length of head,  $1\frac{3}{4}$  length of ventral, extending beyond base of latter. Caudal scaled at the base, with pointed lobes. Caudal peduncle  $2\frac{1}{2}$  to 3 times as long as deep,  $\frac{2}{3}$  to  $\frac{3}{4}$  length of head. 35–37 scales in the lateral line,  $\frac{6-8}{11-12}$  in a transverse line on the body,  $\frac{7-8}{8}$  in a transverse line between dorsal and anal, 10 or 12 round caudal peduncle. Brown above, silvery below; a dark spot at base of caudal, and another below origin of dorsal.

Total length 145 millim.

Ogowe, Congo.

### 5. PETROCEPHALUS SIMUS.

*Petrocephalus simus*, Sauvage, Bull. Soc. Philom. (7) iii. 1878, p. 100.

*Mormyrus (Petrocephalus) simus*, Sauvage, N. Arch. Mus. (2) iii. 1880, p. 51, pl. ii. fig. 3.

*Mormyrus tenuicauda*, Steind. Notes Leyd. Mus. xvi. 1894 p. 69, pl. iv. fig. 1.

*Mormyrus simus*, Günth. Ann. & Mag. N. H. (6) xvii. 1896, p. 282.

Depth of body  $2\frac{4}{5}$  to  $3\frac{1}{3}$  times in total length, length of head 4 to  $4\frac{1}{4}$ . Head as long as deep, with convex upper profile; snout very short,  $\frac{1}{5}$  length of head; obliquely truncate, projecting beyond the mouth; mouth situated below the anterior border of the eye, its width  $\frac{1}{5}$  to  $\frac{1}{4}$  length of head; teeth bicuspid, 14-18 in the upper jaw, 20-24 in the lower; nostrils close together, in front of the eye; eye rather large, a little longer than the snout,  $\frac{2}{3}$  interorbital width. Dorsal 24-28, originating above 5th to 7th ray of anal, its length  $1\frac{3}{4}$  to 2 in its distance from head. Anal 30-33, equally distant from base of ventral and from base of caudal. Pectoral pointed,  $\frac{4}{5}$  length of head, twice as long as ventral, extending beyond base of latter. Caudal scaled at the base, with pointed lobes. Caudal peduncle 3 times as long as deep,  $\frac{3}{4}$  to  $\frac{4}{5}$  length of head. 38-42 scales in the lateral line,  $\frac{9-10}{11-12}$  in a transverse series on the body,  $\frac{11-13}{11-12}$  in a transverse series between dorsal and anal, 12 round caudal peduncle. Brown above, silvery beneath; anterior part of dorsal blackish.

Total length 120 millim.

Ogowe, Liberia.

#### 6. PETROCEPHALUS GLIROIDES.

*Mormyrus gliroides*, Vincig. Ann. Mus. Genova, (2) xvi. 1897, p. 353.

Depth of body  $2\frac{4}{5}$  times in total length, length of head  $3\frac{2}{3}$ . Head nearly as long as deep; snout prominent, rounded, hardly  $\frac{1}{4}$  length of head; mouth inferior, situated below anterior third of eye, its width  $\frac{1}{5}$  length of head; teeth bicuspid, 14 in the upper jaw, 24 in the lower; eye moderate, slightly shorter than the snout,  $\frac{1}{5}$  length of head,  $\frac{1}{2}$  interorbital width. Dorsal 27, originating above 3rd ray of anal, at equal distance from head and base of caudal. Anal 29, equally distant from base of ventral and from base of caudal. Pectoral pointed,  $\frac{2}{3}$  length of head. Caudal peduncle  $2\frac{1}{2}$  as long as deep. About 40 scales in the lateral line,  $\frac{12}{12}$  in a transverse line on the body,  $\frac{12}{14}$  in a transverse line between dorsal and anal, 12 round caudal peduncle. Greyish above, yellowish beneath.

Total length 125 millim.

Between Ganana and Lugh, Somaliland.—I am indebted to the kindness of Prof. Gestro for the loan of the type specimen, preserved in the Genoa Museum.

#### 7. PETROCEPHALUS CATOSTOMA.

*Mormyrus catostoma*, Günth. Cat. vi. p. 222 (1866).

Depth of body 3 to  $3\frac{1}{3}$  times in total length, length of head  $3\frac{1}{2}$  to  $3\frac{2}{3}$ . Head as long as deep, with convex upper profile; snout very short,  $\frac{1}{5}$  length of head, obliquely truncate, projecting beyond



the mouth; mouth situated below the eye, its width  $\frac{1}{4}$  length of head; teeth bicuspid, 12-14 in the upper jaw, 18-20 in the lower; nostrils close together, close to the eye; eye large, longer than the snout, at least  $\frac{3}{4}$  interorbital width. Dorsal 20-22, originating above 4th or 5th ray of anal, its length hardly half its distance from head. Anal 25-29, equally distant from base of ventral and from base of caudal. Pectoral pointed, nearly  $\frac{3}{4}$  length of head, twice as long as ventral, and extending beyond base of latter. Caudal with pointed lobes. Caudal peduncle  $2\frac{1}{2}$  to 3 times as long as deep, almost as long as head. 37-40 scales in the lateral line,  $\frac{9-10}{13-15}$  in a transverse line on the body,  $\frac{10-11}{10-11}$  in a transverse line between dorsal and anal, 16 round caudal peduncle. Silvery, back blackish.

Total length 55 millim.

Rovuma River and Lake Nyassa.

### 3. ISICHTHYS.

*Isichthys*, Gill, Proc. Ac. Philad. 1862, p. 444 (1863); Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 2.

Teeth rather large, few, 5-6 in the upper jaw, 6 in the lower; minute conical teeth on the parasphenoid and on the tongue; mouth subinferior, below the level of the eye. Body much elongate; ventrals much nearer anal than pectorals. Dorsal a little longer than anal. Vertebrae 64 (26 + 38).

#### 1. ISICHTHYS HENRYI.

*Isichthys henryi*, Gill, Proc. Ac. Philad. 1862, p. 444.

*Mormyrops henryi*, Günth. Cat. vi. p. 224 (1866); Hubrecht, Notes Leyd. Mus. iii. 1881, p. 70.

*Mormyrus henryi*, Günth. Ann. & Mag. N. H. (3) xx. 1867, p. 115; Steind. Notes Leyd. Mus. xvi. 1894, p. 66.

*Mormyrus cobitiformis*, Peters, Sitzb. Ges. nat. Fr. Berl. 1882, p. 72.

*Mormyrus (Isistius) henryi*, Sauvage, Bull. Soc. Zool. France, 1884, p. 207, pl. vi. fig. 1.

Depth of body 10 or 11 times in total length, length of head 6 to  $7\frac{1}{2}$  times. Head  $1\frac{3}{4}$  to twice as long as deep; snout rounded,  $\frac{1}{5}$  to  $\frac{1}{4}$  length of head; mouth subinferior, below level of eye, its width  $\frac{1}{4}$  length of head; teeth notched, 5 or 6 in the upper jaw, 6 in the lower; nostrils midway between eye and end of snout; eye small, hardly  $\frac{1}{2}$  length of snout,  $\frac{1}{3}$  interorbital width. Dorsal 39-50, longer than its distance from the head. Anal 38-47, originating a little posterior to origin of dorsal. Pectoral about  $\frac{1}{2}$  length of head. Caudal small, with obtusely pointed lobes. Caudal peduncle twice as long as deep,  $\frac{1}{2}$  length of head. 120-140 scales in the lateral line,  $\frac{2}{3}$  between dorsal and anal, 18-20 round caudal peduncle. Dark brown.

Total length 205 millim.

West Africa, from Liberia to Mayumba, French Congo.

## 4. MARCUSENIUS.

*Petrocephalus*, part., Marcusen, Bull. Ac. St. Pétersb. xii. 1854, p. 14, and Mém. Ac. St. Pétersb. (7) vii. 1864, no. 4, p. 113.

*Marcusenius*, Gill, Proc. Ac. Philad. 1862, p. 129 (1863); Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 2.

*Heteromormyrus*, Steind. Verh. zool.-bot. Ges. Wien, xvi. 1866, p. 765.

Teeth in the jaws small, truncate or notched, few (3-9 in the upper jaw, 4-10 in the lower); minute conical teeth on the parasphenoid and on the tongue; mouth inferior or subinferior, below the level of the eyes. Nostrils widely separated. Body short or moderately elongate; ventrals midway between pectorals and anal, or nearer the former. Dorsal and anal subequal in length, or either the longer. Vertebrae 41-46 (9-12 + 4-5 + 27-30).

*Synopsis of the Species.*

## I. Anal originating before dorsal.

A. Caudal peduncle 4 to 5 times as long as deep.

D. 22-24; A. 30-31; L. l. 62; 12 scales round caudal peduncle.....

1. *marchii* Sauv.

B. Caudal peduncle 2 to 3 times as long as deep, surrounded by 12 scales.

D. 20; A. 25-26; L. l. 67 .....

2. *sphecodes* Sauv.

D. 15-18; A. 25-30; L. l. 58-64 .....

3. *brachyhistius* Gill.

D. 18; A. 22; L. l. 55.....

4. *kingsleyæ* Gthr.

D. 20-21; A. 27-28; L. l. 46-50; caudal peduncle 3 times as long as deep .....

5. *adpersus* Gthr.

D. 20; A. 28; L. l. 48; caudal peduncle twice as long as deep .....

6. *luysii* Sldr.

C. Caudal peduncle  $1\frac{1}{2}$  as long as deep,  $\frac{1}{2}$  length of head.

D. 18; A. 23; L. l. 70; about 20 scales round caudal peduncle.....

7. *pauciradiatus* Sldr.

## II. Dorsal originating before anal.

A. Caudal peduncle 4 times as long as deep.

D. 35; A. 30; L. l. 55; 16 scales round caudal peduncle .....

8. *plagiostoma* Blgr.

B. Caudal peduncle 2 to 3 times as long as deep.

D. 38-40; A. 25-27; L. l. 61-68; 12 scales round caudal peduncle, which is 3 times as long as deep...

9. *wilverthi* Blgr.

D. 30-36; A. 23-27; L. l. 65-70; 14 scales round caudal peduncle, which is twice as long as deep ...

10. *discorhynchus* Ptrs.

D. 35-36; A. 26; L. l. 55-60; 12 scales round caudal peduncle, which is  $2\frac{1}{2}$  as long as deep .....

11. *petherici* Blgr.

D. 33; A. 23; L. l. 60; 12 scales round caudal peduncle, which is 3 times as long as deep .....

12. *psittacus* Blgr.

D. 17-22; A. 20-24; L. l. 53-60; 16 scales round caudal peduncle.....

13. *isidori* C. & V.

## 1. MARCUSENIUS MARCHII.

*Petrocephalus marchei*, Sauvage, Bull. Soc. Philom. (7) iii. 1878, p. 100.

*Mormyrus marcheii*, Sauvage, N. Arch. Mus. (2) iii. 1880, p. 50, pl. ii. fig. 5; Günth. Ann. & Mag. N. H. (6) xvii. 1896, p. 287.

*Marcusenius marchii*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 7.

Depth of body  $3\frac{1}{2}$  to 4 times in total length, length of head  $4\frac{1}{2}$  to 5. Head nearly as long as deep; snout rounded,  $\frac{2}{7}$  length of head, projecting a little beyond the mouth; latter small, inferior, its width  $\frac{1}{5}$  length of head; teeth truncate or feebly notched, 5 in the upper jaw, 6 in the lower; nostrils halfway between end of snout and eye; eye moderate,  $\frac{2}{3}$  length of snout, a little more than  $\frac{1}{2}$  interorbital width. Dorsal 22-24, originating above 10th ray of anal, its length  $2\frac{1}{2}$  in its distance from head. Anal 30-31,  $1\frac{1}{2}$  as long as dorsal, nearer base of ventral than base of caudal. Pectoral pointed, as long as head, twice as long as ventral, extending beyond base of latter. Caudal with pointed lobes. Caudal peduncle 4 to 5 times as long as deep, a little longer than head. 62 scales in the lateral line,  $\frac{7}{16}$  in a transverse line on the body,  $\frac{11}{8}$  in a transverse line between dorsal and anal, 12 round caudal peduncle. Olive-brown above, silvery beneath; head speckled with brown.

Total length 160 millim.

Ogowe.

## 2. MARCUSENIUS SPHECODES.

*Mormyrops sphaecodes*, Sauvage, Bull. Soc. Philom. (7) iii. 1878, p. 101, and N. Arch. Mus. (2) iii. 1880, p. 55, pl. ii. fig. 4.

*Mormyrus sphaecodes*, Günth. Ann. & Mag. N. H. (6) xvii. 1896, p. 280.

*Marcusenius sphaecodes*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 7.

Depth of body equal to length of head, 5 times in total length. Head  $1\frac{1}{4}$  as long as deep; snout rounded,  $\frac{1}{4}$  length of head; mouth small, subinferior, its width  $\frac{1}{5}$  length of head; teeth small, notched, 5 in the upper jaw, 6 in the lower; nostrils on a line with the lower border of the eye, midway between eye and end of snout; eye small,  $\frac{1}{2}$  length of snout,  $\frac{1}{3}$  interorbital width. Dorsal 20, originating above 5th ray of anal, not  $\frac{1}{2}$  as long as its distance from the head. Anal 25-26, equally distant from base of ventral and from base of caudal. Pectoral pointed,  $\frac{3}{4}$  length of head,  $1\frac{1}{2}$  length of ventral, reaching base of latter. Caudal with pointed lobes. Caudal peduncle 3 times as long as deep, nearly as long as head. 67 scales in the lateral line,  $\frac{12}{16}$  in a transverse line on the body,  $\frac{9}{8}$  in a transverse line between dorsal and anal, 12 round caudal peduncle. Brown.

Total length 130 millim.

Ogowe.

## 3. MARCUSENIUS BRACHYHISTIUS.

*Marcusenius brachyistius*, Gill, Proc. Ac. Philad. 1862, p. 139.

*Mormyrus brachyistius*, Günth. Cat. vi. p. 219 (1866).

*Mormyrus microcephalus*, Günth. Ann. & Mag. N. H. (3) xx. 1867, p. 115.

*Mormyrus liberiensis*, Steind. Notes Leyd. Mus. xvi. 1894, p. 67.

Depth of body  $4\frac{1}{3}$  to  $5\frac{1}{3}$  times in total length, length of head  $4\frac{1}{2}$  to  $6\frac{1}{3}$ . Head  $1\frac{1}{5}$  to  $1\frac{1}{4}$  as long as deep, snout convex,  $\frac{1}{4}$  to  $\frac{2}{7}$  length of head, slightly projecting beyond the mouth; mouth small, subinferior, below level of eye, its width  $\frac{1}{5}$  length of head; teeth small, feebly notched, 5 in the upper jaw, 6 in the lower; nostrils nearly equally distant from end of snout and from eye, anterior on a level with centre of latter, posterior with lower border; eye small, about  $\frac{1}{2}$  length of snout or interorbital width. Dorsal 15–18, hardly  $\frac{3}{4}$  as long as its distance from head, originating above 10th to 14th ray of anal. Anal 25–30, nearly twice to  $2\frac{1}{2}$  as long as dorsal, nearer base of caudal than base of ventral. Pectoral obtusely pointed, at least  $\frac{3}{4}$  length of head,  $1\frac{1}{2}$  to  $1\frac{2}{3}$  length of ventral, reaching base of latter. Caudal densely scaled in the basal half, with pointed lobes. Caudal peduncle  $2\frac{1}{2}$  to 3 times as long as deep, as long as head or a little shorter. 58–64 scales in the lateral line,  $\frac{8-10}{13-14}$  in a transverse line on the body,  $\frac{7-8}{6-7}$  in a transverse line between dorsal and anal, 12 round caudal peduncle. Brown.

Total length 175 millim.

West Africa, from Sierra Leone to the Congo.

#### 4. MARCUSENIUS KINGSLEYÆ.

*Mormyrus kingsleyæ*, Günth. Ann. & Mag. N. H. (6) xvii. 1896, p. 281, pl. xv. fig. A.

*Marcusenius kingsleyæ*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 7.

Depth of body  $4\frac{1}{2}$  times in total length, length of head 5. Head  $1\frac{1}{4}$  as long as deep; snout convex,  $\frac{1}{4}$  length of head, slightly projecting beyond the mouth; mouth small, subinferior, below level of eye, its width  $\frac{1}{4}$  length of head; teeth feebly notched, 5 in the upper jaw, 6 in the lower; nostrils nearly equally distant from end of snout and from eye, anterior on a level with centre of latter, posterior with lower border; eye small,  $\frac{1}{2}$  length of snout,  $\frac{2}{5}$  interorbital width. Dorsal 18, its length  $\frac{1}{3}$  its distance from head, originating above 8th ray of anal. Anal 22, a little longer than dorsal, nearer base of caudal than base of ventral. Pectoral pointed,  $\frac{4}{5}$  length of head,  $1\frac{2}{3}$  length of ventral, not reaching base of latter. Caudal densely scaled in the basal half, with pointed lobes. Caudal peduncle  $2\frac{1}{2}$  as long as deep,  $\frac{3}{4}$  length of head. 55 scales in the lateral line,  $\frac{10}{14}$  in a transverse line on the body,  $\frac{8}{7}$  in a transverse line between dorsal and anal, 12 round caudal peduncle. Brown.

Total length 100 millim.

Old Calabar.



## 5. MARCUSENIUS ADSPERSUS.

*Mormyrus adspersus*, Günth. Cat. vi. p. 221 (1866).

*Marcusenius adspersus*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 7.

Depth of body 3 times in total length, length of head 4 to  $4\frac{1}{3}$ . Head as long as deep; snout rounded,  $\frac{1}{5}$  length of head; mouth small, subinferior, its width  $\frac{1}{5}$  length of head; teeth small, notched, 7 in the upper jaw, 8 in the lower; nostrils on a line with centre of eye, posterior close to eye; eye moderate, as long as snout,  $\frac{2}{3}$  interorbital width. Dorsal 20–21, originating above 9th or 10th ray of anal, about  $\frac{1}{2}$  as long as its distance from head. Anal 27–28, equally distant from base of ventral and from base of caudal. Pectoral as long as head, twice as long as ventral, reaching nearly to extremity of latter. Caudal with obtusely pointed lobes. Caudal peduncle 3 times as long as deep, nearly as long as head. 46–50 scales in the lateral line,  $\frac{10}{14}$  in a transverse line on the body,  $\frac{10}{10}$  in a transverse line between dorsal and anal, 12 round caudal peduncle. Brown, dotted with blackish, the dots largest on the head.

Total length 80 millim.

Lagos.

## 6. MARCUSENIUS LHUYSI.

*Mormyrus lhuysii*, Steind. Sitzb. Ak. Wien, lxi. i. 1870, p. 553, pl. ii. fig. 3.

*Marcusenius lhuysii*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 7.

Depth of body  $3\frac{1}{4}$  times in total length, length of head  $4\frac{1}{2}$ . Head a little longer than deep; snout rounded, not quite  $\frac{1}{4}$  length of head; mouth small, terminal, but situated below the level of the eyes; no mental swelling; teeth small, truncate, 5 in the upper jaw, 6 in the lower; eye as long as the snout; posterior nostril a little lower down than upper, close to the eye. Dorsal 20, originating above 8th ray of anal, its length  $2\frac{1}{2}$  in its distance from head. Anal 28, nearer base of caudal than base of ventral. Pectoral pointed, not quite so long as head, twice as long as ventral, extending as far as the extremity of the latter. Caudal with rounded lobes. Caudal peduncle twice as long as deep, about  $\frac{2}{3}$  length of head. 48 scales in the lateral line, 12 round caudal peduncle. Greyish above, silvery beneath, spotted with brown.

Total length 75 millim.

Senegal.—Type in the Vienna Museum.

## 7. MARCUSENIUS PAUCIRADIATUS.

*Mormyrus pauciradiatus*, Steind. Verh. zool.-bot. Ges. Wien, xvi. 1866, p. 765, pl. xvii. fig. 2.

*Marcusenius pauciradiatus*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 7.

Depth of body equal to length of head, 4 times in total length,

Head  $1\frac{1}{4}$  as long as deep; snout rounded,  $\frac{1}{4}$  length of head; mouth small, subterminal, but situated considerably below the level of the eyes; no mental swelling; teeth small, notched; eye rather small,  $\frac{2}{3}$  length of snout; nostrils on a horizontal line on a level with the lower border of the eye, midway between the latter and the end of the snout. Dorsal 18, originating a little posterior to origin of anal, its length 3 times in its distance from head. Anal 23, a little nearer base of caudal than base of ventral. Pectoral shorter than head, hardly reaching base of ventral. Caudal with rounded lobes. Caudal peduncle  $1\frac{1}{2}$  as long as deep,  $\frac{1}{2}$  length of head. 70 scales in the lateral line, about 20 round caudal peduncle.

Total length 100 millim.

Angola.—Type in the Vienna Museum.

#### 8. MARCUSENIUS PLAGIOSTOMA.

*Marcusenius plagiosoma*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 7, pl. iii. fig. 1.

Depth of body 3 times in total length, length of head 5. Head as long as deep, with slightly concave upper profile; snout  $\frac{1}{5}$  length of head; mouth inferior, below anterior border of eye, its width  $\frac{1}{5}$  length of head; teeth very small, feebly notched, 9 in the upper jaw, 10 in the lower; nostrils on a line with lower border of eye, posterior close to the eye; eye moderate, as long as snout,  $\frac{2}{3}$  interorbital width. Dorsal 35, as long as its distance from head. Anal 30, originating below 12th ray of dorsal, equally distant from base of ventral and from base of caudal. Pectoral pointed, as long as head,  $1\frac{2}{3}$  length of ventral, reaching beyond base of latter. Caudal peduncle 4 times as long as deep,  $\frac{3}{4}$  length of head. 55 scales in the lateral line,  $\frac{15}{22}$  in a transverse line on the body,  $\frac{12}{15}$  in a transverse line between dorsal and anal, 16 round caudal peduncle. Pale brownish above.

Total length 170 millim.

Lower Congo.

#### 9. MARCUSENIUS WILVERTHI.

*Marcusenius wilverthi*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 8, pl. iv. fig. 1.

Depth of body  $2\frac{1}{2}$  to 3 times in total length, length of head  $4\frac{3}{4}$  to 5; back gibbose and keeled, with convex outline in front of the dorsal and concave outline on the nape. Head as long as deep, with convex upper and concave lower profile; snout short,  $\frac{1}{4}$  to  $\frac{1}{3}$  length of head; mouth terminal or subinferior, its width  $\frac{1}{4}$  to  $\frac{1}{3}$  length of head, much below the level of the eyes; chin with a strong globular swelling; teeth extremely minute, almost hidden in the thick gums, truncate or slightly notched, 3 in the upper jaw, 6 in the lower; nostrils in the posterior half of the snout, posterior a little lower down than anterior, which is on a

level with centre of eye; eye moderate,  $\frac{2}{3}$  to  $\frac{3}{4}$  length of snout or interorbital width. Dorsal 38-40,  $1\frac{2}{3}$  to  $1\frac{3}{4}$  length of anal, its length equalling its distance from the head. Anal 25-27, originating below 12th or 13th ray of dorsal, a little nearer base of ventral than base of caudal. Pectoral pointed, a little shorter than head,  $1\frac{1}{2}$  to  $1\frac{2}{3}$  length of ventral, extending a little beyond base of latter. Caudal scaled in its basal two-thirds, with pointed lobes. Caudal peduncle 3 times as long as deep,  $\frac{4}{5}$  length of head. 61-68 scales in the lateral line,  $\frac{20-21}{20-21}$  in a transverse line on the body,  $\frac{12-14}{13-14}$  in a transverse line between dorsal and anal, 12 round caudal peduncle. Yellowish.

Total length 260 millim.

Congo.

#### 10. MARCUSENIUS DISCORHYNCHUS.

*Mormyrus discorhynchus*, Peters, Mon. Berl. Ac. 1852, p. 275, and Reise n. Mossamb. iv. p. 75, pl. xiv. (1868).

*Marcusenius discorhynchus*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 7.

Depth of body 3 to  $3\frac{1}{3}$  times in total length, length of head  $4\frac{1}{2}$  to  $4\frac{2}{3}$ . Head as long as deep; snout rounded,  $\frac{2}{7}$  length of head; mouth small, subinferior, its width  $\frac{1}{5}$  length of head; teeth small, notched, 5 in the upper jaw, 6 in the lower; nostrils on a line with the lower border of the eye, nearer the latter than the end of the snout; eye moderate, a little shorter than the snout,  $\frac{2}{3}$  interorbital width. Dorsal 30-36, its length hardly  $1\frac{1}{2}$  in its distance from head. Anal 23-27, originating below 10th to 12th ray of dorsal, equally distant from base of ventral and from base of caudal. Pectoral pointed, nearly as long as head,  $1\frac{1}{2}$  length of ventral, extending to base of latter or a little beyond. Caudal with obtusely pointed lobes. Caudal peduncle twice as long as deep, a little shorter than head. 65-70 scales in the lateral line,  $\frac{17-20}{20-21}$  in a transverse line on the body,  $\frac{13-15}{13-15}$  in a transverse line between dorsal and anal, 14 round caudal peduncle. Dark olive or brownish; ventrals red.

Total length 140 millim. (grows to 260).

Lower Zambesi; Lake Nyassa.

#### 11. MARCUSENIUS PETHERICI.

*Mormyrus discorhynchus* (non Peters), Günth. Cat. vi. p. 220 (1866).

*Marcusenius petherici*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 7.

Depth of body 3 to  $3\frac{1}{4}$  times in total length, length of head  $4\frac{2}{3}$  to 5. Head as long as deep; snout rounded, nearly  $\frac{1}{4}$  length of head; mouth small, subinferior, its width  $\frac{1}{5}$  length of head; teeth small, notched, 5 in the upper jaw, 6 in the lower; nostrils on a line with the lower border of the eye, nearer the latter than

the end of the snout; eye moderate, as long as snout, at least  $\frac{2}{3}$  interorbital width. Dorsal 35-36, a little shorter than its distance from head. Anal 26, originating below 15th or 16th ray of dorsal, equally distant from base of ventral and from base of caudal. Pectoral pointed, as long as head,  $1\frac{2}{3}$  to  $1\frac{3}{4}$  length of ventral, extending beyond base of latter. Caudal with obtusely pointed lobes. Caudal peduncle  $2\frac{1}{2}$  as long as deep, as long as head. 55-60 scales in the lateral line,  $\frac{18-21}{19-22}$  in a transverse line on the body,  $\frac{12-13}{12-13}$  in a transverse line between dorsal and anal, 12 round caudal peduncle. Silvery, brownish on the back.

Total length 210 millim.

Upper Nile.

#### 12. MARCUSENIUS PSITTACUS.

*Mormyrus psittacus*, Bouleng. Ann. & Mag. N. H. (6) xx. 1897, p. 427.

*Marcusenius psittacus*, Bouleng. Ann. Mus. Congo, Zool. 1898, p. 7.

Depth of body  $3\frac{1}{2}$  times in total length, length of head  $4\frac{1}{2}$ . Head as long as deep; snout rounded,  $\frac{1}{4}$  length of head; mouth small, terminal, below level of eye, its width  $\frac{1}{5}$  length of head; teeth small, notched, 3 in the upper jaw, 4 in the lower; chin slightly swollen; nostrils on a line with centre of eye, nearer latter than end of snout; eye rather large, slightly longer than snout, equal to interorbital width. Dorsal 33, as long as its distance from the head. Anal 23, originating below 13th ray of dorsal, equally distant from base of ventral and from base of caudal. Pectoral pointed, a little shorter than head,  $1\frac{1}{2}$  as long as ventral, reaching base of latter. Caudal with pointed lobes. Caudal peduncle 3 times as long as deep, as long as head. 60 scales in the lateral line,  $\frac{13}{16}$  in a transverse line on the body,  $\frac{10}{11}$  in a transverse line between dorsal and anal, 12 round caudal peduncle. Silvery, dark grey on the back.

Total length 125 millim.

Upper Congo.

#### 13. MARCUSENIUS ISIDORI.

*Mormyrus isidori*, Cuv. & Val. xix. p. 285 (1846); Günth. Cat. p. 221 (1866).

*Petrocephalus isidori*, Marcusen, Bull. Ac. St. Pétersb. xii. 1854, p. 14, and Mém. Ac. St. Pétersb. (7) vii. 1864, no. 4, p. 150, pl. v. fig. 20.

*Marcusenius isidori*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 7.

Depth of body 3 to  $3\frac{1}{3}$  times in total length, length of head 4 to  $4\frac{1}{2}$ . Head as long as deep; snout short, rounded,  $\frac{1}{5}$  to  $\frac{1}{4}$  length of head, projecting beyond the mouth; mouth inferior, just in front of vertical of anterior border of eye, its width  $\frac{1}{5}$  to  $\frac{1}{4}$



length of head; teeth small, notched, 7 in the upper jaw, 8 in the lower; anterior nostril on a line with centre of eye, halfway between latter and end of snout; posterior nostril close to eye, near its lower border; eye moderate, as long as snout, about  $\frac{1}{2}$  interorbital width. Dorsal 17-22, originating above 3rd or 4th ray of anal, its length  $\frac{1}{2}$  its distance from head. Anal 20-24, equally distant from base of ventral and from base of caudal. Pectoral pointed, as long as head, nearly  $2\frac{1}{2}$  as long as ventral, extending almost as far as extremity of latter. Caudal with pointed lobes. Caudal peduncle  $2\frac{1}{2}$  to 3 times as long as deep, a little shorter than head. 53-60 scales in the lateral line,  $\frac{9-10}{15}$  in a transverse line on the body,  $\frac{11-12}{10-11}$  in a transverse line between dorsal and anal, 16 round caudal peduncle. Silvery.

Total length 90 millim.

Nile.

### 5. STOMATORHINUS.

*Stomatorhinus*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 9.

Teeth in the jaws bicuspid, few (7-10 in the upper jaw, 8-10 in the lower); minute conical teeth on the parasphenoid and on the tongue; mouth inferior, considerably in advance of the eyes. Nostrils widely separated, superposed, the lower close to the mouth. Body short; ventrals nearer pectorals than anal. Dorsal and anal subequal in length. Vertebrae 39 (14+25).

#### 1. STOMATORHINUS WALKERI.

*Mormyrus walkeri*, Günth. Ann. & Mag. N. H. (3) xx. 1867, p. 116, pl. iii. fig. C.

*Petrocephalus affinis*, Sauvage, Bull. Soc. Philom. (7) iii. 1878, p. 101.

*Mormyrus affinis*, Sauvage, N. Arch. Mus. (2) iii. 1880, p. 52, pl. ii. fig. 2; Günth. Ann. & Mag. N. H. (6) xvii. 1896, p. 283.

*Stomatorhinus walkeri*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 9.

Depth of body  $3\frac{1}{2}$  to  $3\frac{2}{3}$  times in total length, length of head  $3\frac{3}{4}$ . Head  $1\frac{1}{8}$  as long as deep; snout rounded,  $\frac{1}{4}$  length of head; mouth small, its width  $\frac{1}{5}$  length of head; 10 teeth in either jaw; eye moderate,  $\frac{2}{3}$  length of snout,  $\frac{1}{2}$  interorbital width. Dorsal 19-20, a little more than  $\frac{1}{2}$  as long as its distance from head. Anal 23-25, a little nearer base of caudal than base of ventral, originating a little in advance of dorsal. Pectoral pointed, about  $\frac{2}{3}$  length of head,  $1\frac{2}{3}$  length of ventral, extending beyond base of latter. Caudal with rounded lobes. Caudal peduncle  $2\frac{1}{2}$  as long as deep,  $\frac{2}{3}$  length of head. 50-53 scales in the lateral line,  $\frac{6-7}{17-18}$  in a transverse line on the body,  $\frac{10}{10}$  in a transverse line between dorsal and anal, 16 round caudal peduncle. Brown.

Total length 90 millim.

Ogowe.

## 2. STOMATORHINUS MICROPS.

*Stomatorhinus microps*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 9, pl. iv. fig. 2.

Depth of body 4 to  $4\frac{1}{2}$  times in total length, length of head 4. Head  $1\frac{1}{4}$  to  $1\frac{1}{3}$  as long as deep; snout rounded,  $\frac{1}{4}$  to  $\frac{2}{7}$  length of head; mouth small, its width  $\frac{1}{8}$  to  $\frac{1}{5}$  length of head; 7 teeth in the upper jaw, 8 in the lower; eye extremely small. Dorsal 18-20, about  $\frac{1}{2}$  as long as its distance from head. Anal 20-22, nearer base of caudal than base of ventral. Pectoral obtusely pointed,  $\frac{2}{3}$  length of head,  $1\frac{2}{3}$  length of ventral, extending beyond base of latter. Caudal with rounded lobes. Caudal peduncle twice as long as deep, about  $\frac{1}{2}$  length of head. 48-50 scales in the lateral line,  $\frac{7-8}{14-15}$  in a transverse line on the body,  $\frac{8}{9-10}$  in a transverse line between dorsal and anal, 16 round caudal peduncle. Colourless.

Total length 90 millim.

Lower Congo.

## 6. MYOMYRUS.

*Myomyrus*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 9.

5 or 6 conical teeth<sup>1</sup> in the upper jaw, 6 compressed teeth in the lower jaw, median pair very large and incisor-like; mouth inferior, anterior to the eyes. Nostrils close together, distant from the eye. Body short; ventrals nearer pectorals than anal. Dorsal much longer than anal. Vertebrae 50 (14+4+32).

## 1. MYOMYRUS MACRODON.

*Myomyrus macrodon*, Bouleng. l. c. p. 10, pl. vii. fig. 1.

Depth of body equal to length of head,  $4\frac{1}{3}$  to  $4\frac{2}{3}$  times in total length. Head  $1\frac{1}{5}$  to  $1\frac{1}{4}$  as long as deep, with slightly concave upper profile; snout short,  $\frac{2}{7}$  length of head, strongly projecting beyond the mouth; mouth small, its width  $\frac{1}{6}$  length of head; nostrils below level of eye, nearer end of snout than eye; eye very small,  $\frac{1}{4}$  interorbital width. Dorsal 41-42, slightly longer than its distance from end of snout. Anal 30, originating below 13th ray of dorsal, a little nearer base of caudal than base of ventral. Pectoral obtusely pointed,  $\frac{2}{3}$  length of head,  $1\frac{1}{3}$  length of ventral, reaching base of latter. Caudal scaled, with rounded lobes. Caudal peduncle 3 times as long as deep,  $\frac{3}{5}$  length of head. 88-90 scales in the lateral line,  $\frac{19-20}{24-25}$  in a transverse line on the body,  $\frac{11}{15}$  in a transverse line between dorsal and anal, 20 round caudal peduncle. Pale brownish above, whitish below.

Total length 240 millim.

Lower Congo.

<sup>1</sup> Through a sciagraph for which I am indebted to Messrs. Gardiner and Green, I have ascertained that the upper teeth are by no means so minute as they look in the undissected specimen, where nothing but their small points project from the thick lips.

## 7. GNATHONEMUS.

*Mormyrops*, part., Marcusen, Bull. Ac. St. Pétersb. xii. 1854, p. 14, and Mém. Ac. St. Pétersb. (7) vii. 1864, no. 4, p. 113.

*Gnathonemus*, Gill, Proc. Ac. Philad. 1862, p. 443; Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 2.

*Campylomormyrus*, Bleek. Versl. Ak. Amsterd. (2) viii. 1874, p. 367.

Teeth in the jaws small, conical, truncate, or notched, few (3-7 in the upper jaw, 4-10 in the lower); minute conical teeth on the parasphenoid and on the tongue; mouth terminal (not below the level of the lower border of the eye in the short-snouted forms). Nostrils moderately far apart, remote from the eye. Body moderately elongate; ventrals equally distant from pectorals and from anal, or nearer the former. Dorsal and anal not very unequal in length. Vertebrae 45-48 (12-13+4-8+27-30).

*Synopsis of the Species.*

I. Snout shorter than postocular part of head.

A. Anal originating more or less in advance of dorsal.

1. Dorsal 18-25.

a. Teeth notched.

D. 18-20; A. 26-28; no mental appendage or swelling; lat. l. 51-56; 12 scales round caudal peduncle.....

1. *niger* Gthr.

D. 22; A. 28; skin with a long pointed dermal appendage; lat. l. 58 .....

2. *longibarbis* Hilg.

D. 20-25; A. 25-29; chin with a globular swelling; lat. l. 43-49; 8 scales round caudal peduncle.....

3. *moorii* Gthr.

D. 22; A. 28; chin with a globular swelling; lat. l. 65; 12 scales round caudal peduncle.....

4. *livingstonii* Blgr.

D. 23; A. 34; chin with a globular swelling; lat. l. 58; 12 scales round caudal peduncle.....

5. *bentleyi* Blgr.

b. Teeth conical.

D. 23-24; A. 28-32; chin with a globular swelling; lat. l. 56-62; 14-16 scales round caudal peduncle.

6. *maerolepidotus* Ptrs.

2. Dorsal 26-33.

a. Teeth conical or truncate; a globular mental swelling.

D. 26-28; A. 32-35; lat. l. 70-86; 16 scales round caudal peduncle.....

7. *cyprinoides* L.

D. 26-28; A. 31-36; lat. l. 66-72; 12 scales round caudal peduncle.....

8. *senegalensis* Sldr.

D. 28-31; A. 37-40; lat. l. 70-80; 12 scales round caudal peduncle.....

9. *stanleyanus* Blgr.

b. Teeth notched.

D. 29-33; A. 36; chin with a globular swelling; lat. l. 84-85; 12 scales round caudal peduncle.

10. *mento* Blgr.

D. 29-30; A. 36-38; chin with a short dermal appendage, as long as the eye; lat. l. 78-80; 12 scales round caudal peduncle .....

11. *monteiri* Gthr.

D. 27-29; A. 34-38; chin with a long dermal appendage, a little longer than the snout; lat. l. 63-70; 8 scales round caudal peduncle.....

12. *petersii* Gthr.

- B. Dorsal originating a little in advance of anal.
- D. 28; A. 30; chin with a globular swelling; lat. 1.55; 12 scales round caudal peduncle..... 13. *ussleri* Gthr.
- D. 35; A. 31; chin with a short dermal appendage; lat. 1.80; 8 scales round caudal peduncle..... 14. *greshoffi* Schilth.
- II. Snout much longer than postocular part of head, tubiform; lower jaw with a dermal appendage.
- A. 12 scales round caudal peduncle.
- D. 26-30; A. 30-33; length of snout 4-5 times its least depth; mental appendage about as long as the eye ..... 15. *tamandua* Gthr.
- D. 34; A. 35; length of snout 3 times its least depth; mental appendage  $\frac{2}{3}$  length of snout..... 16. *mirus* Blgr.
- D. 33; A. 34-36; snout directed downwards at right angles to the outline of the pectoral region, its length 3-4 times its least depth; mental appendage not longer than eye ..... 17. *elephas* Blgr.
- B. 16-18 scales round caudal peduncle; mental appendage short.
- D. 28-31; A. 31-35; snout strongly curved, its length  $5\frac{1}{2}$ -7 times its least depth..... 18. *rhynchophorus* Blgr.
- D. 32; A. 36; snout strongly curved, its length 12 times its least depth..... 19. *curvirostris* Blgr.
- D. 32; A. 36; snout feebly curved, its length 20 times its least depth ..... 20. *numenius* Blgr.

### 1. GNATHONEMUS NIGER.

*Mormyrus niger*, Günth. Cat. vi. p. 219 (1866).

*Gnathonemus niger*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 10.

Depth of body  $3\frac{1}{2}$  to  $3\frac{2}{3}$  times in total length, length of head 5. Head as long as deep, with convex upper profile; snout very short,  $\frac{1}{5}$  length of head: mouth on a level with the lower border of the eye; no mental swelling; teeth small, notched, 5 in the upper jaw, 8 in the lower; eye rather small, slightly shorter than the snout,  $\frac{1}{2}$  to  $\frac{3}{5}$  interorbital width. Dorsal 18-20, originating above 9th or 10th ray of anal, its length 2 to  $2\frac{1}{2}$  times in its distance from head. Anal 26-28, nearer base of caudal than base of ventral. Pectoral a little longer than head, at least twice as long as ventral, extending almost to extremity of latter. Caudal densely scaled in its basal third, with obtusely pointed lobes. Caudal peduncle twice as long as deep,  $\frac{3}{4}$  to  $\frac{4}{5}$  length of head. 51-56 scales in the lateral line,  $\frac{8-9}{14-15}$  in a transverse line on the body,  $\frac{8-9}{8-9}$  in a transverse line between dorsal and anal, 12 round caudal peduncle. Blackish brown.

Total length 115 millim.

Gambia.

### 2. GNATHONEMUS LONGIBARBIS.

*Mormyrus longibarbis*, Hilgend. Sitzb. Ges. nat. Fr. Berl. 1888, p. 78.



*Gnathonemus longibarbis*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 10.

Chin with a very long pointed dermal appendage, its length nearly equal to that of the snout. Dorsal 22; anal 28; pectoral  $\frac{2}{3}$  length of head. Lat. l. 58; l. tr.  $\frac{11}{11}$ .

Victoria Nyanza.—Type in Berlin Museum; insufficiently described.

### 3. GNATHONEMUS MOORII.

? *Mormyrus*, sp. n., Heuglin, Sitzb. Ak. Wien, ix. 1852, p. 920, pl. lx. fig. 1.

? *Petrocephalus pictus*, Marcusen, Mém. Ac. St. Pétersb. (7) vii. 1864, p. 153.

*Mormyrus moorii*, Günth. Ann. & Mag. N. H. (3) xx. 1867, p. 116.

*Mormyrus lepturus*, Günth. Proc. Zool. Soc. 1871, p. 670, pl. lxxix. fig. B, and Ann. & Mag. Nat. Hist. (6) xvii. 1896, p. 280.

*Mormyrus grandisquamis*, Peters, Mon. Berl. Ac. 1876, p. 250, pl. —. fig. 3; Schilth. Tijdschr. Nederl. Dierk. Ver. (2) iii. 1891, p. 84.

*Gnathonemus moorii*, Bouleng. Ann. Mus. Congo, Zool. i. 1898 p. 10.

Depth of body  $3\frac{1}{5}$  to  $3\frac{1}{2}$  times in total length, length of head 4 to  $4\frac{2}{3}$ . Head as long as deep or slightly longer than deep, with curved upper profile; snout short, about  $\frac{1}{4}$  length of head; mouth on a level with the lower border of the eye; a dermal swelling on the chin; teeth small, notched, 5 in the upper jaw, 6 in the lower; eye moderate,  $\frac{2}{3}$  to  $\frac{3}{4}$  length of snout, about  $\frac{1}{2}$  interorbital width. Dorsal 20–25, originating above 4th to 6th ray of anal, its length 2 to  $2\frac{1}{3}$  times in its distance from the head. Anal 25–29, equally distant from base of ventral and base of caudal, or nearer the latter. Pectoral as long as head, twice as long as ventral, extending beyond base of latter. Caudal densely scaled in its anterior third, with pointed lobes. Caudal peduncle  $2\frac{1}{2}$  to 3 times as long as deep, a little shorter than head. 43–49 scales in the lateral line,  $\frac{10-11}{13-15}$  in a transverse line on the body,  $\frac{7}{7}$  in a transverse line between dorsal and anal, 8 round caudal peduncle. Brownish, with a dark brown vertical band from the anterior rays of the dorsal to the anterior rays of the anal.

Total length 150 millim.

Gaboon, Ogowe, Congo; Upper Nile (?).

### 4. GNATHONEMUS LIVINGSTONII, sp. n.

Depth of body  $3\frac{2}{3}$  times in total length, length of head  $4\frac{1}{2}$ . Head nearly as long as deep, with curved upper profile; snout  $\frac{2}{7}$  length of head; mouth small; chin with a globular dermal appendage; teeth small, bicuspid, 5 in the upper jaw, 6 in the lower; eye small,  $\frac{1}{2}$  length of snout,  $\frac{2}{5}$  interorbital width. Dorsal 22, originating above 10th ray of anal, its length  $2\frac{1}{2}$  in its distance

from head. Anal 28, equally distant from base of ventral and from base of caudal. Pectoral obtusely pointed,  $\frac{3}{4}$  length of head, twice length of ventral, reaching a little beyond base of latter. Caudal with obtusely pointed lobes. Caudal peduncle 3 times as long as deep, a little shorter than head. 65 scales in the lateral line,  $\frac{15}{20}$  in a transverse line on the body,  $\frac{11}{11}$  in a transverse line between dorsal and anal, 12 round caudal peduncle. Silvery, brownish on the back; a dark brown vertical bar on the body below origin of dorsal.

Total length 83 millim.

R. Rovuma. A single young specimen collected by C. Livingstone.

##### 5. GNATHONEMUS BENTLEYI.

*Mormyrus bentleyi*, Bouleng. Ann. & Mag. Nat. Hist. (6) xx. 1897, p. 426.

*Gnathonemus bentleyi*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 10.

Depth of body equal to length of head, 5 times in total length. Head  $1\frac{1}{4}$  as long as deep, upper profile slightly concave above the eye; snout  $\frac{1}{4}$  length of head; mouth on a line with lower border of eye, its width  $\frac{1}{5}$  length of head; teeth moderately large, notched, 7 in the upper jaw, 10 in the lower; chin strongly swollen; eye moderate,  $\frac{1}{5}$  length of snout,  $\frac{2}{5}$  interorbital width. Dorsal 23, originating above 5th ray of anal, its length twice in its distance from head. Anal 34, nearer base of caudal than base of ventral. Pectoral pointed, almost as long as head, nearly twice as long as ventral, extending beyond base of latter. Caudal densely scaled, with pointed lobes. Caudal peduncle 3 times as long as deep, almost as long as head. 58 scales in the lateral line,  $\frac{9}{15}$  in a transverse line on the body,  $\frac{8}{10}$  in a transverse line between dorsal and anal, 12 round caudal peduncle. Dark olive.

Total length 270 millim.

Upper Congo.

##### 6. GNATHONEMUS MACROLEPIDOTUS.

*Mormyrus macrolepidotus*, Peters, Mon. Berl. Ac. 1852, p. 275; Günth. Cat. vi. p. 219 (1866); Peters, Reise n. Mossamb. iv. p. 79, pl. xv. fig. 1 (1868).

*Mormyrops macrolepidotus*, Marcusen, Mém. Ac. St. Pétersb. (7) vii. 1864, no. 4, p. 142.

*Gnathonemus macrolepidotus*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 10.

Depth of body  $3\frac{1}{2}$  to 4 times in total length, length of head  $4\frac{1}{2}$  to 5. Head nearly as long as deep, with curved upper profile; snout  $\frac{1}{4}$  length of head; chin with a globular dermal appendage; teeth minute, conical, 3 or 5 in the upper jaw, 6 in the lower; eye moderate,  $\frac{2}{3}$  to  $\frac{3}{4}$  length of snout,  $\frac{1}{2}$  interorbital

width. Dorsal 23-24, originating above 5th to 8th ray of anal, its length about  $2\frac{1}{2}$  in its distance from head. Anal 28-32, a little nearer base of caudal than base of ventral. Pectoral obtusely pointed, shorter than head, reaching base of ventral or a little beyond. Caudal with obtusely pointed lobes. Caudal peduncle 3 times as long as deep, nearly as long as head. 58-68 scales in the lateral line,  $\frac{10-12}{17-19}$  in a transverse line on the body,  $\frac{8-12}{8-12}$  in a transverse series between dorsal and anal, 14 or 16 round caudal peduncle. Silvery, brownish on the back, sometimes with brown blotches.

Reaches a length of 320 millim.

Zambezi.

#### 7. GNATHONEMUS CYPRINOIDES.

*Mormyrus cyprinoides*, Linn. Mus. Ad. Frid. ii. p. 109 (1764), and S. N. i. p. 522 (1766); Cuv. & Val. xix. p. 265 (1849); Günth. Cat. vi. p. 218 (1866).

*Mormyrus salahie*, Lacép. Poiss. v. p. 619 (1803).

*Mormyrus labiatus*, Geoffr. Descr. Égypte, Poiss. p. 275, pl. vii. fig. 1 (1829); Rüpp. Fortsetz. Besch. n. Fische Nil, p. 9, pl. ii. fig. 2 (1832).

*Mormyrus elongatus*, Rüpp. l. c. fig. 1.

*Mormyrus abbreviatus*, Cuv. & Val. t. c. p. 270.

*Mormyrops cyprinoides*, Marcusen, Bull. Ac. St. Pétersb. xii. 1854, p. 14.

*Mormyrops elongatus*, Marcusen, l. c.

*Mormyrus abbreviatus*, Marcusen, l. c.

*Mormyrops labiatus*, Marcusen, Mém. Ac. St. Pétersb. (7) vii. 1864, no. 4, p. 137.

*Gnathonemus cyprinoides*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 11.

Depth of body  $3\frac{1}{2}$  to 5 times in total length, length of head  $4\frac{3}{4}$  to  $5\frac{1}{2}$ . Head slightly longer than deep, with curved upper profile; snout about  $\frac{1}{4}$  length of head; mouth small, on a line with lower border of eye; chin with a globular dermal appendage; teeth minute, conical, 5 in the upper jaw, 6 in the lower; eye moderate,  $\frac{1}{2}$  to  $\frac{2}{3}$  length of snout,  $\frac{2}{5}$  to  $\frac{1}{2}$  interorbital width. Dorsal 26-28, originating above 6th to 9th ray of anal, its length 2 to  $2\frac{1}{2}$  in its distance from head. Anal 32-35<sup>1</sup>, equally distant between base of ventral and base of caudal, or a little nearer the former. Pectoral pointed, as long as head or a little shorter, twice as long as ventral, reaching base of latter or beyond. Caudal scaled in its basal half, with pointed lobes. Caudal peduncle  $2\frac{1}{2}$  to 3 times as long as deep, as long as head or a little shorter. 70-86 scales in the lateral line,  $\frac{15-20}{22-24}$  in a transverse series on the body,  $\frac{12-15}{12-15}$  in a transverse series between dorsal and anal, 16 round

<sup>1</sup> The posterior rays produced in the males (*M. elongatus* Rüpp.).

caudal peduncle. Silvery, brownish above, uniform or with dark blotches.

Total length 270 millim.

Nile, Congo.

8. GNATHONEMUS SENEGALENSIS.

*Mormyrus senegalensis*, Steind. Sitzb. Ak. Wien, lxi. i. 1870, p. 551, pl. iv. fig. 1.

*Gnathonemus senegalensis*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 11.

Depth of body 3 to  $3\frac{2}{3}$  times in total length, length of head  $4\frac{2}{3}$  to  $4\frac{3}{4}$ . Head nearly as long as deep, with curved upper profile; snout less than  $\frac{1}{4}$  length of head; mouth small, on a line with lower border of eye; chin with a globular dermal appendage; teeth small, conical, 5 in the upper jaw, 6 in the lower; eye moderate,  $\frac{2}{3}$  length of snout. Dorsal 26–28, originating above 6th ray of anal, its length twice in its distance from head. Anal 31–36, nearer base of caudal than base of ventral. Pectoral pointed, a little shorter than head, twice as long as ventral, reaching base of latter. Caudal scaled in its basal half, with pointed lobes. Caudal peduncle 3 times as long as deep,  $\frac{3}{4}$  length of head. 66–72 scales in the lateral line,  $\frac{14}{15}$  in a transverse line between dorsal and anal, 12 round caudal peduncle. Steel-blue above, silvery white below.

Total length 200 millim.

Senegal.

9. GNATHONEMUS STANLEYANUS.

*Mormyrus stanleyanus*, Bouleng. Ann. & Mag. N. H. (6) xx. 1897, p. 426.

*Gnathonemus stanleyanus*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, pl. 11.

Depth of body  $3\frac{1}{4}$  to  $3\frac{3}{4}$  times in total length, length of head  $4\frac{1}{2}$  to 5. Head little longer than deep, upper profile slightly convex; snout  $\frac{1}{3}$  length of head; mouth small, on a line with centre of eye, its width  $\frac{1}{5}$  length of head; a globular dermal swelling on the chin; teeth small, conical or truncate, 7 in the upper jaw, 6 in the lower; eye moderate,  $\frac{2}{3}$  length of snout,  $\frac{3}{5}$  to  $\frac{3}{4}$  interorbital width. Dorsal 28–31, originating above 9th–11th ray of anal, its length twice in its distance from head. Anal 37–40, nearer base of caudal than base of ventral. Pectoral pointed,  $\frac{4}{5}$  length of head, twice as long as ventral, extending beyond base of latter. Caudal scaled, with obtusely pointed lobes. Caudal peduncle 3 times as long as deep,  $\frac{3}{4}$  length of head. 70–80 scales in the lateral line,  $\frac{15-18}{20-22}$  in a transverse line on the body,  $\frac{15-16}{14-15}$  in a transverse line between dorsal and anal, 12 round caudal peduncle. Silvery, dark grey on the back.

Total length 220 millim.

Congo.—The type-specimen came from Stanley Falls. I have examined other specimens from Matadi and Upoto.



## 10. GNATHONEMUS MENTO.

*Mormyrus mento*, Bouleng. Ann. & Mag. N. H. (6) vi. 1890, p. 193; Steind. Notes Leyd. Mus. xvi. 1894, p. 72.

*Gnathonemus mento*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 11.

Depth of body  $3\frac{1}{2}$  times in total length, length of head 5. Head as long as deep, with strongly curved upper profile; snout  $\frac{8}{10}$  length of head; mouth small, on a line with lower border of eye; a strong mental swelling; teeth small, notched, 5 in the upper jaw, 6 in the lower; eye moderate,  $\frac{3}{4}$  length of snout, about  $\frac{2}{3}$  interorbital width. Dorsal 29-33, originating above 9th ray of anal, its length twice in its distance from head. Anal 36, equally distant from base of ventral and from base of caudal. Pectoral a little shorter than head,  $1\frac{2}{3}$  length of ventral, extending a little beyond base of latter. Caudal scaled in its basal half, with pointed lobes. Caudal peduncle nearly 4 times as long as deep, as long as head. 84-85 scales in the lateral line,  $\frac{14}{24}$  in a transverse line on the body,  $\frac{14}{12}$  in a transverse line between dorsal and anal, 12 round caudal peduncle. Silvery, with fine brown dots, which are very crowded on the head and the dorsal and ventral lines.

Total length 190 millim.

Gaboon, Liberia.

## 11. GNATHONEMUS MONTEIRI.

*Mormyrus monteiri*, Günth. Ann. & Mag. N. H. (4) xii. 1873, p. 144.

*Gnathonemus monteiri*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 11.

Depth of body  $3\frac{1}{4}$  to 4 times in total length, length of head  $4\frac{1}{3}$  to  $4\frac{2}{3}$ . Head  $1\frac{1}{4}$  to  $1\frac{1}{3}$  as long as deep, upper profile descending in a straight or slightly convex line; snout  $\frac{1}{3}$  length of head; lower jaw with a roundish, depressed dermal appendage about as long as the eye; teeth very small, notched, 5 in the upper jaw, 6 in the lower; eye moderate,  $\frac{1}{2}$  to  $\frac{2}{3}$  length of snout,  $\frac{2}{3}$  to  $\frac{3}{4}$  interorbital width. Dorsal 29-30, originating above 10th to 12th ray of anal, its length twice in its distance from head. Anal 36-38, equally distant from base of ventral and base of caudal. Pectoral pointed, little shorter than head, more than twice as long as ventral, extending beyond base of latter. Caudal scaled, with pointed lobes. Caudal peduncle 3 times as long as deep,  $\frac{3}{4}$  to  $\frac{4}{5}$  length of head. 78-80 scales in the lateral line,  $\frac{16-19}{21-23}$  in a transverse line on the body,  $\frac{13-15}{10-14}$  in a transverse line between dorsal and anal, 12 round caudal peduncle. Uniform silvery.

Total length 185 millim.

Angola.

## 12. GNATHONEMUS PETERSII.

*Mormyrus petersii*, Günth. Arch. f. Nat. 1862, p. 64; Proc. Zool. Soc. 1864, p. 22, pl. ii. fig. 2; Cat. vi. p. 218 (1866); and in Petherick's Trav. ii. p. 256 (1869).

*Gnathonemus petersii*, Gill, Proc. Ac. Philad. 1862, p. 444.

Depth of body  $3\frac{3}{4}$  to  $4\frac{1}{4}$  times in total length, length of head  $4\frac{1}{4}$  to  $4\frac{2}{3}$ . Head  $1\frac{1}{3}$  to  $1\frac{1}{2}$  as long as deep, upper profile descending in a straight or slightly convex line; snout  $\frac{2}{5}$  length of head; lower jaw with a cylindrical, tapering dermal appendage, a little longer than the snout and directed forwards; teeth very small, notched, 5 in the upper jaw, 6 in the lower; eye moderate, about  $\frac{1}{2}$  length of snout,  $\frac{2}{5}$  to  $\frac{1}{2}$  interorbital width. Dorsal 27-29, originating above 10th to 12th ray of anal, its length nearly twice in its distance from head. Anal 34-36, nearer base of caudal than base of ventral. Pectoral pointed, almost as long as head, twice as long as ventral, extending beyond base of latter. Caudal scaled, with pointed lobes. Caudal peduncle 3 times as long as deep,  $\frac{2}{3}$  to  $\frac{3}{4}$  length of head. 63-70 scales in the lateral line,  $\frac{12-13}{15-18}$  in a transverse line on the body,  $\frac{10-11}{10-11}$  in a transverse line between dorsal and anal, 8 round caudal peduncle. Dark brown, with two lighter vertical bars between dorsal and anal.

Total length 230 millim.

Old Calabar, Congo, White Nile.

## 13. GNATHONEMUS USSHERI.

*Mormyrus ussheri*, Günth. Ann. & Mag. N. H. (3) xx. 1867, p. 116; Steind. Notes Leyd. Mus. xvi. 1894, p. 71.

*Gnathonemus ussheri*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 11.

Depth of body  $3\frac{1}{3}$  times in total length, length of head  $4\frac{2}{3}$ . Head a little longer than deep, with curved upper profile; snout short,  $\frac{2}{7}$  length of head; mouth small, on a level with lower border of eye; a globular ventral swelling; teeth small, notched, 5 in the upper jaw, 6 in the lower; eye moderate,  $\frac{2}{3}$  length of snout or interorbital width. Dorsal 27-28, originating very slightly in advance of anal, its length a little less than twice in its distance from the head. Anal 30-32, equally distant from base of ventral and from base of caudal. Pectoral pointed, as long as head, twice as long as ventral, extending beyond base of latter. Caudal scaled in its anterior half, with pointed lobes. Caudal peduncle twice as long as deep, slightly shorter than head. 55-57 scales in the lateral line,  $\frac{10}{15}$  in a transverse series on the body,  $\frac{9}{9}$  in a transverse series between dorsal and anal, 12 round caudal peduncle. Brown.

Total length 170 millim.

Gold Coast, Liberia.

## 14. GNATHONEMUS GRESHOFFI.

*Mormyrus greshoffi*, Schilthuis, Tijdschr. Nederl. Dierk. Ver. (2) iii. 1891, p. 90, pl. vi. fig. 3.

*Gnathonemus greshoffi*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 11.

Depth of body  $3\frac{1}{2}$  times in total length, length of head  $4\frac{1}{2}$ . Head a little longer than deep, upper profile descending in a curve; snout  $\frac{1}{4}$  length of head; lower jaw with a dermal appendage half the length of the snout; teeth very small, 3 in the upper jaw, 2 (?) in the lower; eye large, situated in the anterior half of the head, its diameter a little greater than the length of the snout or the interorbital width. Dorsal 35, originating a little in advance of the anal, its length twice in the distance from end of snout. Anal 31, nearer base of ventral than base of caudal. Pectoral pointed, almost as long as head, twice as long as ventral, extending beyond base of latter. Caudal rather small, with pointed lobes. Caudal peduncle 5 times as long as deep, as long as head. 80 scales in the lateral line, 8 round caudal peduncle. Silvery.

Total length 108 millim.

Lower Congo.

## 15. GNATHONEMUS TAMANDUA.

*Mormyrus tamandua*, Günth. Proc. Zool. Soc. 1864, p. 22, pl. ii. fig. 1, and Cat. vi. p. 217 (1866).

*Gnathonemus tamandua*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 11.

Depth of body 4 to  $4\frac{1}{2}$  times in total length, length of head 4 to  $4\frac{1}{3}$ . Upper profile of head descending in a strong curve; snout much prolonged, tubiform, strongly compressed, curved downwards, its length  $1\frac{2}{3}$  to 2 postocular part of head, and 4 to 5 times its least depth, which nearly equals diameter of eye; latter  $\frac{2}{3}$  interorbital width; lower jaw with a compressed dermal appendage about as long as the eye; mouth very small; teeth very small, conical, 3 in upper jaw, 4 in the lower. Dorsal 26-30, originating above 6th to 8th ray of anal, its length  $1\frac{1}{2}$  to  $1\frac{4}{5}$  in its distance from head. Anal 30-33, nearer base of caudal than base of ventral. Pectoral obtusely pointed,  $\frac{3}{5}$  to  $\frac{2}{3}$  length of head, ventral  $\frac{1}{3}$  to  $\frac{2}{5}$ ; pectoral extending beyond base of ventral. Caudal densely scaled, with pointed lobes. Caudal peduncle  $3\frac{1}{2}$  times as long as deep,  $\frac{2}{3}$  to  $\frac{3}{4}$  length of head. 70-80 scales in the lateral line,  $\frac{12-18}{19-21}$  in a transverse line on the body,  $\frac{14-15}{12-15}$  in a transverse line between dorsal and anal, 12 round caudal peduncle. Brownish above.

Total length 230 millim.

Congo, Old Calabar.

## 16. GNATHONEMUS MIRUS.

*Gnathonemus mirus*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 11, pl. iii. fig. 2.

Depth of body  $3\frac{1}{2}$  times in total length, length of head 4. Upper profile of head descending in a strong curve; snout much prolonged, tubiform, strongly compressed, curved downwards, its length twice postocular part of head, and 3 times its least depth, which is twice diameter of eye; latter  $\frac{2}{3}$  interorbital width; lower jaw with a long, compressed, attenuate dermal appendage, measuring nearly  $\frac{3}{4}$  length of snout; mouth very small; teeth very small, conical, 3 in the upper jaw, 4 in the lower. Dorsal 34, originating above 4th ray of anal, its length  $1\frac{1}{2}$  in its distance from head. Anal 35, equally distant from base of ventral and base of caudal. Pectoral pointed, about  $\frac{2}{3}$  length of head, extending to middle of ventral, which is only  $\frac{1}{2}$  as long. Caudal scaled, with obtusely pointed lobes. Caudal peduncle 3 times as long as deep,  $\frac{2}{3}$  length of head. 78 scales in the lateral line,  $\frac{17}{25}$  in a transverse line on the body,  $\frac{20}{18}$  in a transverse line between dorsal and anal, 12 round caudal peduncle. Brownish above.

Total length 320 millim.

Upper Congo.

## 17. GNATHONEMUS ELEPHAS.

*Gnathonemus elephas*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 12, pl. v. fig. 1.

Depth of body  $3\frac{2}{3}$  to  $3\frac{3}{4}$  times in total length, length of head 4 to  $4\frac{1}{4}$ . Upper profile of head descending in a very strong curve; snout much prolonged, tubiform, strongly compressed, directed almost straight downwards at right angles to the outline of the pectoral region, its length nearly twice postocular part of head, 3 to 4 times its least depth, which is  $1\frac{1}{2}$  diameter of eye; latter  $\frac{2}{3}$  interorbital width; lower jaw with a short, wart-like, cylindrical, dermal appendage as long as or a little shorter than diameter of eye; mouth very small; teeth very small, conical, 3 in the upper jaw, 4 in the lower. Dorsal 33, originating above 5th ray of anal, its length  $1\frac{1}{3}$  to  $1\frac{2}{5}$  its distance from head. Anal 34-36, equally distant from base of ventral and base of caudal. Pectoral pointed, little shorter than head, extending to middle or second third of ventral, and twice as long as the latter. Caudal scaled, with pointed lobes. Caudal peduncle 3 times as long as deep, as long as head or a little shorter. 80 scales in the lateral line,  $\frac{15}{23}$  in a transverse line on the body,  $\frac{16-18}{15-16}$  in a transverse line between dorsal and anal, 12 round caudal peduncle. Brownish above.

Total length 400 millim.

Upper Congo.

## 18. GNATHONEMUS RHYNCHOPHORUS. (Plate LL.)

*Gnathonemus rhynchophorus*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 13, pl. v. fig. 2.





Swan Electric Engraving Co.

GNATHONEMUS RHYNCHOPHORUS.

Green & Gardner, Setagraph.



Depth of body equal to length of head,  $3\frac{1}{5}$  to 4 times in total length. Upper profile of head descending in a strong curve; snout much prolonged, tubiform, strongly compressed, curved downwards, its length 2 to  $2\frac{1}{3}$  postocular part of head, and  $5\frac{1}{2}$  to 7 times its least depth, which nearly equals diameter of eye; latter  $\frac{2}{3}$  interorbital width; lower jaw with a compressed dermal appendage about as long as the eye; mouth very small; teeth very small, conical, 5 in the upper jaw, 4 in the lower. Dorsal 28-31, originating above 6th or 7th ray of anal, its length  $1\frac{1}{2}$  to  $1\frac{3}{4}$  in its distance from head. Anal 31-35, nearly equally distant from base of ventral and base of caudal. Pectoral obtusely pointed,  $\frac{1}{2}$  length of head, ventral  $\frac{1}{3}$  or rather less; pectoral extending beyond base of ventral. Caudal scaled, with pointed lobes. Caudal peduncle 3 to  $3\frac{1}{2}$  times as long as deep,  $\frac{1}{2}$  to  $\frac{2}{3}$  length of head. 75-85 scales in the lateral line,  $\frac{18-21}{31-32}$  in a transverse line on the body,  $\frac{20-23}{20-23}$  in a transverse line between dorsal and anal, 18 round caudal peduncle. Brownish, with a rather indistinct darker vertical band between dorsal and anal.

Total length 380 millim.

Upper Congo.

#### 19. GNATHONEMUS CURVIROSTRIS.

*Gnathonemus curvirostris*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 13, pl. vi. fig. 1.

Depth of body  $4\frac{2}{3}$  times in total length, length of head  $3\frac{1}{5}$ . Upper profile of head descending in a strong curve; snout much prolonged, tubiform, strongly compressed, curved downwards, its length  $3\frac{1}{2}$  postocular part of head, and 12 times its least depth, which a little exceeds diameter of eye; latter slightly more than  $\frac{1}{2}$  interorbital width; lower jaw with a compressed dermal appendage  $1\frac{1}{2}$  diameter of eye; mouth very small; teeth very small, conical, 3 in the upper jaw, 4 in the lower. Dorsal 32, originating above 10th ray of anal, its length  $1\frac{1}{2}$  in its distance from head. Anal 36, equally distant from base of ventral and base of caudal. Pectoral pointed,  $\frac{1}{2}$  length of head, ventral nearly  $\frac{1}{4}$ , pectoral extending beyond base of ventral. Caudal scaled, with pointed lobes. Caudal peduncle 4 times as long as deep, more than  $\frac{1}{2}$  length of head. 90 scales in the lateral line,  $\frac{18}{22}$  in a transverse line on the body,  $\frac{18}{17}$  in a transverse line between dorsal and anal, 16 round caudal peduncle. Pale brownish above, whitish below.

Total length 370 millim.

Lower Congo.

#### 20. GNATHONEMUS NUMENIUS.

*Gnathonemus numenius*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 14, pl. vi. fig. 2.

Depth of body  $4\frac{2}{3}$  to 5 times in total length, length of head  $2\frac{2}{5}$  to  $2\frac{1}{2}$ . Upper profile of head convex; snout produced in an

extremely long, compressed tube, feebly curved downwards, its length 5 to  $5\frac{1}{2}$  times postocular part of head, and 20 times its least depth, which equals diameter of eye; latter  $\frac{2}{3}$  interorbital width; lower jaw with a compressed dermal appendage nearly as long as the eye; mouth very small; teeth very small, 7 in the upper jaw, 4 or 6 in the lower. Dorsal 32, originating above 8th or 9th ray of anal, its length  $1\frac{3}{4}$  in its distance from head. Anal 36, equally distant from base of ventral and base of caudal. Pectoral pointed,  $\frac{1}{3}$  length of head, almost twice as long as ventral, and extending almost to the extremity of the latter. Caudal scaled, with obtusely pointed lobes. Caudal peduncle 3 times as long as deep, not quite  $\frac{1}{3}$  length of head; 79–81 scales in the lateral line,  $\frac{18}{24-25}$  in a transverse line on the body,  $\frac{19}{17-18}$  in a transverse line between dorsal and anal, 16 round caudal peduncle. Pale brownish above, whitish beneath. Total length 610 millim.

Upper Congo.

### 8. MORMYRUS.

*Mormyrus*, part., Linn. Syst. Nat. i. p. 522 (1766), et auctor.

*Scrophicephalus*, Swains. Nat. Hist. Fish. ii. p. 187 (1839).

*Mormyrus*, *Mormyrodes*, Gill, Proc. Ac. Philad. 1864, p. 139.

*Solenomormyrus*, Bleek. Versl. Ak. Amsterd. (2) viii. 1874, p. 368.

*Mormyrus*, Bouleng. Ann. Mus. Congo, i. 1898, p. 2.

Teeth in the jaws small, notched, few (5–8 in the upper jaw, 8–12 in the lower); minute conical teeth on the parasphenoid and on the tongue; mouth terminal. Nostrils moderately far apart, remote from the eye. Body moderately elongate; ventrals equally distant from pectorals and from anal, or nearer the former. Dorsal much elongate, at least  $2\frac{2}{3}$  as long as anal. Vertebrae 49–54 (12–13 + 7–10 + 30–31).

### *Synopsis of the Species.*

#### I. Snout not more than $\frac{1}{3}$ length of head.

A. Dorsal originating in advance of base of ventral; pectoral rounded.

D. 70; A. 18; caudal peduncle twice as long as deep,  $\frac{1}{2}$  length of head; pectoral  $\frac{1}{2}$  length of head.....

1. *hasselquisti* Geoffr.

D. 62–66; A. 18–20; caudal peduncle twice as long as deep, nearly  $\frac{1}{2}$  length of head; pectoral  $\frac{2}{3}$  length of head .....

2. *anchietæ* Guim.

D. 70; A. 20; caudal peduncle  $1\frac{1}{2}$  as long as deep,  $\frac{2}{3}$  length of head; pectoral a little more than  $\frac{1}{2}$  length of head .....

3. *guentheri* Blgr.

B. Dorsal originating above base of ventral; pectoral pointed, at least  $\frac{2}{3}$  length of head; caudal peduncle  $2\frac{1}{2}$  as long as deep,  $\frac{2}{3}$ – $\frac{1}{2}$  length of head.

D. 65; A. 21; eye nearly as long as snout .....

4. *macrophthalmus* Gthr.

D. 53; A. 23; eye  $\frac{1}{2}$  length of snout.....

5. *ovis* Blgr.



II. Snout at least  $\frac{2}{3}$  length of head.

## A. Dorsal originating above or in advance of base of ventral.

1. Caudal peduncle  $1\frac{3}{4}$  to  $2\frac{1}{2}$  times as long as deep, at least nearly  $\frac{1}{2}$  length of head.

a. Dorsal 80-87; anal 17-20.

a. Pectoral pointed, more than  $\frac{1}{2}$  length of head.

Length of head not greater than depth of body; upper profile of head a continuous descending straight line or feeble curve; 26-30 scales round caudal peduncle, which is twice as long as deep and  $\frac{1}{2}$  length of head .....

6. *caschive* Hasselq.

Length of head greater than depth of body; snout with slightly concave upper profile .....

7. *niloticus* Bl. Schn.

Length of head not greater than depth of body, upper profile a continuous descending curve; caudal peduncle more than twice as long as deep.

8. *jubelini* C. & V.

β. Pectoral rounded,  $\frac{1}{2}$  length of head; upper profile of head descending in a straight line .....

9. *rumé* C. & V.

b. Dorsal 58-78.

D. 71-78, 5-5 $\frac{1}{2}$  times as long as anal; A. 18-20; pectoral pointed,  $\frac{2}{3}$ - $\frac{3}{4}$  length of head; 22-26 scales round caudal peduncle .....

10. *longirostris* Ptrs.

D. 58-66, 4-4 $\frac{1}{2}$  times as long as anal; A. 18-21; pectoral pointed,  $\frac{2}{3}$ - $\frac{3}{4}$  length of head; 26-28 scales round caudal peduncle .....

11. *kannume* Forsk.

D. 62, 3 times as long as anal; A. 23; pectoral rounded, hardly  $\frac{1}{2}$  length of head; 12 scales round caudal peduncle .....

12. *caballus* Blgr.

2. Caudal peduncle  $1\frac{1}{2}$  as long as deep,  $\frac{1}{2}$  length of head; D. 75, nearly 5 times as long as anal; A. 19; pectoral pointed, nearly  $\frac{1}{2}$  length of head; 18 scales round caudal peduncle .....

13. *proboscirostris* Blgr.

B. Dorsal 60, originating further back than ventral; anal 20 .....

14. *tenuirostris* Ptrs.

## 1. MORMYRUS HASSELQUISTI.

*Mormyrus herse* (non Sonnini), Lacép. Hist. Poiss. v. p. 620 (1803).

*Mormyrus caschive* (non Hasselq.), Geoffr. Descr. Égypte, Poiss. p. 273, pl. vi. fig. 2 (1829).

*Mormyrus hasselquistii*, Cuv. & Val. xix. p. 253 (1846); Marcusen, Mém. Ac. St. Pétersb. (7) vii. 1864, no. 4, p. 130.

Depth of body nearly equal to length of head, 4 times in total length. Head  $1\frac{2}{3}$  as long as deep, with curved upper profile; snout  $\frac{1}{2}$  as long as postorbital part of head, projecting a little beyond the mouth; teeth small, notched; eye moderate, its diameter  $2\frac{1}{2}$  in length of snout. Dorsal 70, originating in advance of ventral, twice as far from base of caudal as from end of snout,  $5\frac{1}{2}$  times as long as anal. Anal 18, originating nearer base of caudal than base of pectoral. Pectoral rounded,  $\frac{1}{2}$  length of head, ventral  $\frac{1}{3}$ .

Caudal with obtusely pointed lobes. Caudal peduncle twice as long as deep, nearly  $\frac{1}{2}$  length of head. About 100 scales in the lateral line, 26 round caudal peduncle. Plumbeous or olive above, dorsal with oblique dark streaks.

Total length 350 millim.

Nile.—This description is drawn up from the figure in the 'Description de l'Égypte' and the account given by Valenciennes.

## 2. MORMYRUS ANCHIETÆ.

*Mormyrus anchietæ*, Guimaraes, Journ. Sc. Lisb. x. 1884, p. 4, pl. i. fig. 3.

Depth of body  $4\frac{1}{2}$  to  $5\frac{1}{2}$  times in total length, length of head 4 to  $4\frac{1}{2}$ . Head  $1\frac{1}{2}$  as long as deep, with curved upper profile; snout about  $\frac{1}{2}$  as long as postorbital part of head: chin swollen, rather prominent; teeth small, notched, 7 in the upper jaw, 10 in the lower; eye moderate, its diameter about  $\frac{1}{3}$  length of snout. Dorsal 62–66, originating in advance of ventral, twice as far from end of snout as from extremity of caudal, 4 times as long as anal. Anal 18–20, originating nearer base of caudal than base of pectoral. Pectoral rounded, nearly  $\frac{2}{3}$  length of head, ventral  $\frac{2}{5}$ . Caudal densely scaled, with pointed lobes. Caudal peduncle twice as long as deep, nearly  $\frac{1}{2}$  length of head. 86 scales in the lateral line, 30 in a transverse series on the body, 20 or 22 (?) round caudal peduncle. Brownish above, silvery beneath; a whitish streak along the lateral line.

Total length 330 millim.

Cunene and Caconda, Angola.—Type in Lisbon Museum.

The insufficiently characterized *Mormyrus lacerdæ*, Castelnau, Poiss. Afr. Austr. p. 61 (1861), from Lake N'gami, may be identical with this species. D. 72; A. 19. Upper surface of head and anal fin blackish.

## 3. MORMYRUS GUENTHERI, sp. n.

*Mormyrus hasselquistii* (non C. & V.), Günth. Cat. vi. p. 217 (1866).

Depth of body  $5\frac{1}{2}$  times in total length, length of head  $4\frac{1}{3}$ . Head  $1\frac{1}{2}$  as long as deep, with curved upper profile; snout  $\frac{1}{2}$  as long as postorbital part of head, projecting a little beyond the mouth; width of mouth  $\frac{1}{2}$  length of snout; teeth small, notched, 8 in the upper jaw, 12 in the lower; eye moderate, its diameter  $\frac{1}{2}$  length of snout or interorbital width. Dorsal 70, originating in advance of ventral, nearly twice as far from base of caudal as from end of snout,  $4\frac{1}{2}$  times as long as anal. Anal 20, originating nearer base of caudal than base of pectoral. Pectoral rounded, a little more than  $\frac{1}{2}$  length of head, ventral  $\frac{2}{5}$ . Caudal with obtusely pointed lobes. Caudal peduncle  $1\frac{1}{3}$  as long as deep,  $\frac{2}{5}$  length of head. 98 scales in the lateral line,  $\frac{17}{20}$  in a transverse series on the

body, 30 in a transverse series between dorsal and anal, 30 round caudal peduncle. Brownish.

Total length 185 millim.

West Africa.

#### 4. MORMYRUS MACROPHthalmus.

*Mormyrus macrophthalmus*, Günth. Cat. vi. p. 217 (1866).

Depth of body nearly 5 times in total length, length of head 6. Head scarcely longer than deep, with strongly curved upper profile; snout short,  $\frac{1}{2}$  as long as postorbital part of head, projecting a little beyond the mouth; teeth very small, feebly notched, 7 in the upper jaw, 8 in the lower; eye large, in the anterior half of the head, nearly as long as the snout,  $1\frac{1}{2}$  interorbital width. Dorsal 65, originating slightly in advance of ventral, twice as far from base of caudal as from end of snout,  $4\frac{1}{2}$  times as long as anal. Anal 21, originating a little nearer base of caudal than end of snout. Pectoral pointed, as long as the head, ventral  $\frac{2}{3}$ . Caudal with long pointed lobes, as long as head. Caudal peduncle  $2\frac{1}{2}$  as long as head,  $\frac{1}{3}$  length of head. 98 scales in the lateral line,  $\frac{18}{19}$  in a transverse series on the body, 23 in a transverse series between dorsal and anal, 12 round caudal peduncle.

Total length 290 millim.

West Africa.

#### 5. MORMYRUS OVIS.

*Mormyrus ovis*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 15, pl. vii. fig. 2.

Depth of body 4 times in total length, length of head  $4\frac{3}{4}$ . Head  $1\frac{1}{4}$  as long as deep, with strongly curved upper profile; snout short,  $\frac{2}{3}$  postorbital part of head; teeth very small, notched, 5 in the upper jaw, 8 in the lower; eye moderate,  $\frac{1}{2}$  length of snout,  $\frac{2}{3}$  interorbital width. Dorsal 53, originating above base of ventral, a little longer than its distance from the end of the snout,  $2\frac{2}{3}$  as long as anal. Anal 23, originating a little nearer head than base of caudal. Pectoral obtusely pointed,  $\frac{3}{4}$  length of head, ventral  $\frac{2}{3}$ . Caudal with obtusely pointed lobes, as long as head. Caudal peduncle  $2\frac{1}{2}$  as long as deep,  $\frac{3}{4}$  length of head. 92 scales in the lateral line,  $\frac{26}{18}$  in a transverse series on the body, 29 in a transverse series between dorsal and anal, 16 round caudal peduncle. Pale brownish.

Total length 290 millim.

Upper Congo.

#### 6. MORMYRUS CASCHIVE.

*Mormyrus caschive*, Hasselq. Iter Palæst. p. 398 (1757); Cuv. & Val. xix. p. 227 (1846); Marcusen, Mém. Ac. St. Pétersb. (7) vii. 1864, no. 4, p. 120; Günth. Cat. vi. p. 215 (1866).

*Mormyrus longipinnis*, Rüpp. Fortsetz. Besch. n. Fische Nil, p. 7, pl. i. fig. 2 (1832).

*Scrophicephalus longipinnis*, Swains. Nat. Hist. Fish. i. p. 309 (1838).

Depth of body 4 to  $5\frac{1}{2}$  times in total length, length of head 4 to  $4\frac{2}{3}$ . Upper profile of head descending in a straight line or feeble curve; snout produced, about as long as the postocular part of the head, its length 2 to 4 times its least depth; mouth very small, with thick lips; teeth small, notched, 5 or 7 in the upper jaw, 8 or 10 in the lower; eye moderate, its diameter about twice in interorbital width. Dorsal 80–87, originating in advance of base of ventral,  $5\frac{1}{2}$  to  $6\frac{1}{4}$  times as long as anal,  $1\frac{1}{3}$  to  $1\frac{2}{3}$  as long as its distance from the end of the snout. Anal 18–20, originating at equal distance from the base of the pectoral and that of the caudal. Pectoral obtusely pointed,  $\frac{2}{3}$  length of head, ventral  $\frac{1}{2}$ . Caudal with pointed lobes, densely scaled. Caudal peduncle  $1\frac{2}{3}$  to twice as long as deep,  $\frac{1}{2}$  length of head. 100–130 scales in the lateral line,  $\frac{27-30}{28-35}$  in a transverse line on the body, 38–45 in a transverse line between dorsal and anal, 26 to 30 round caudal peduncle. Olive above, whitish below.

Total length 520 millim.

Nile, Gaboon, Congo.

*Mormyrus nacra*, Cuv. & Val. xix. p. 257, is founded on a coloured sketch of a fish apparently closely related to *M. caschive*.

#### 7. MORMYRUS NILOTICUS.

*Centriscus niloticus*, Bloch, Schneid. Syst. p. 113, pl. xxx. fig. 1 (1801).

*Mormyrus geoffroyi*, Cuv. & Val. xix. p. 240 (1846).

*Mormyrus niloticus*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 15.

Depth of body less than length of head,  $4\frac{1}{2}$  times in total length. Snout long, straight, prolonged in the axis of the body, with slightly concave upper profile; lower jaw slightly projecting. Dorsal 84. Anal 17. Otherwise similar to *M. caschive*, but scales a little smaller.

Total length 300 millim.

Nile.—Known to me only from Valenciennes's description, and Schneider's very imperfect figure.

#### 8. MORMYRUS JUBELINI.

*Mormyrus jubelini*, Cuv. & Val. xix. p. 252 (1846).

General shape and proportions as in *M. caschive*, but caudal peduncle more slender, and fewer scales round the latter. D. 85; A. 19.

Senegal.—Imperfectly known from Valenciennes's description.

#### 9. MORMYRUS RUME.

*Mormyrus rume*, Cuv. & Val. xix. p. 248, pl. cccclxix. (1846).

Depth of body  $3\frac{1}{2}$  times in total length, length of head 4. Upper profile of head descending in a straight line; snout pro-



duced, about as long as the postocular part of the head, its length  $2\frac{1}{2}$  times its least depth; mouth very small, lower jaw slightly projecting; eye small. Dorsal 83, originating in advance of base of ventral, 6 times as long as anal,  $1\frac{1}{2}$  as long as its distance from end of snout. Anal 18, originating at equal distance from the base of the pectoral and that of the caudal. Pectoral rounded,  $\frac{1}{2}$  length of head. Caudal with obtusely pointed lobes. Caudal peduncle twice as long as deep,  $\frac{1}{2}$  length of head. About 100 scales in the lateral line, about 20 round caudal peduncle. Greyish olive.

Senegal.—Paris Museum.

#### 10. MORMYRUS LONGIROSTRIS.

*Mormyrus longirostris*, Peters, Mon. Berl. Ac. 1852, p. 275; Günth. Cat. vi. p. 216 (1866); Peters, Reise n. Mossamb. iv. p. 83, pl. xvi. fig. 2 (1868).

*Mormyrus mucupe*, Peters, ll. cc. pp. 275, 87, pl. xvi. fig. 1; Günth. l. c. p. 215.

*Mormyrus geoffroyi*, Günth. l. c. p. 216.

*Mormyrus oxyrhynchus* (non Geoffr.), Schilth. Tijdschr. Nederl. Dierk. Ver. (2) iii. 1891, p. 84.

Depth of body  $3\frac{2}{3}$  to 5 times in total length, length of head 4 to  $4\frac{1}{2}$ . Head  $1\frac{1}{3}$  to  $1\frac{2}{3}$  as long as deep, with curved or nearly straight descending upper profile; snout produced, as long as or a little shorter than the postocular part of the head, its length 2 to  $3\frac{1}{2}$  times its least depth; mouth very small, lower jaw slightly projecting; teeth small, notched, 5 or 7 in the upper jaw, 8 or 10 in the lower; eye moderate, its diameter about twice in interorbital width. Dorsal 71–78, originating in advance of ventral, 5 to  $5\frac{1}{2}$  times as long as anal,  $1\frac{1}{6}$  to  $1\frac{1}{4}$  as long as its distance from the end of the snout. Anal 18–20, originating at nearly equal distance from the base of the pectoral and that of the caudal. Pectoral pointed,  $\frac{3}{5}$  to  $\frac{2}{3}$  length of head, ventral  $\frac{2}{5}$  to  $\frac{1}{2}$ . Caudal with pointed lobes, densely scaled. Caudal peduncle twice as long as deep, about  $\frac{1}{2}$  length of head. 95–108 scales in the lateral line,  $\frac{30}{33}$  in a transverse series on the body, 40–50 in a transverse series between dorsal and anal, 20–26 round caudal peduncle. Olive above, whitish below.

Total length 190 millim.

Nile, Zambesi, Congo.

#### 11. MORMYRUS KANNUME.

*Mormyrus kannume*, Forsk. Descr. Anim. p. 74 (1775); Marcusen, Mém. Ac. St. Pétersb. (7) vii. 1864, no. 4, p. 114.

*Mormyrus oxyrhynchus*, Geoffr. Descr. Égypte, Poiss. i. p. 270, pl. vi. fig. 1 (1829); Joannis, Mag. Zool. 1835, iii. pl. xiii.; Cuv. & Val. xix. p. 242 (1846); Günth. Cat. vi. p. 216 (1866); Hilgend. Sitzb. Ges. nat. Fr. Berl. 1888, p. 78.

*Mormyrus bachiqua*, Cuv. & Val. l. c. p. 248.

*Scrophicephalus kanume*, Rüpp. Verz. Mus. Senckenb. iv. p. 27 (1852).

? *Mormyrus hildebrandti*, Peters, Sitzb. Ges. naturf. Fr. Berl. 1882, p. 73.

Depth of body  $3\frac{2}{3}$  to  $4\frac{2}{3}$  times in total length, length of head 4 to  $4\frac{1}{2}$ . Upper profile of head descending in a strong curve; snout much produced, about as long as the postocular part of the head, its length  $2\frac{1}{2}$  to 3 times its least depth; mouth very small, with thick lips; teeth small, notched, 5 or 7 in the upper jaw, 8 or 10 in the lower; eye small, its diameter 2 or 3 times in interorbital width. Dorsal 58–66, originating above or slightly in advance of base of ventral,  $4-4\frac{1}{2}$  times as long as anal, as long as or a little longer than its distance from the end of the snout. Anal 18–21, originating at equal distance from the base of the pectoral and that of the caudal. Pectoral pointed,  $\frac{2}{3}$  to  $\frac{3}{4}$  length of head, ventral  $\frac{1}{2}$ . Caudal with obtusely pointed lobes. Caudal peduncle  $1\frac{3}{4}$  to 2 as long as deep, nearly  $\frac{1}{2}$  length of head. 80–95 scales in the lateral line,  $\frac{23-27}{28-33}$  in a transverse series on the body, 35–42 in a transverse series between dorsal and anal, 26 or 28 round caudal peduncle. Brownish or olive above, white beneath.

Total length 480 millim.

Nile; Victoria-Nyanza.—The type of *M. hildebrandti* is from the Adi R., Ukamba, E. Africa.

## 12. MORMYRUS CABALLUS.

*Mormyrus caballus*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 16, pl. viii. fig. 1.

Depth of body equal to length of head,  $3\frac{3}{5}$  times in total length. Upper profile of head descending in a curve; snout produced, as long as the postocular part of the head, its length about twice its least depth; mouth very small, with thick lips; teeth small, notched, 7 in the upper jaw, 10 in the lower; eye moderate, its diameter 4 times in length of snout and  $1\frac{1}{2}$  in interorbital width. Dorsal 62, originating above base of ventral, 3 times as long as anal, as long as its distance from the end of the snout. Anal 23, originating at equal distance from the head and the base of the caudal. Pectoral rounded, hardly  $\frac{1}{2}$  length of head, ventral  $\frac{2}{5}$ . Caudal densely scaled, with obtusely pointed lobes. Caudal peduncle  $2\frac{1}{2}$  as long as deep,  $\frac{1}{2}$  length of head. 85 scales in the lateral line,  $\frac{30}{28}$  in a transverse series on the body, 32 in a transverse series between dorsal and anal, 12 round caudal peduncle. Bluish grey above, vinaceous pink below; fins pink.

Total length 500 millim.

Upper Congo.

## 13. MORMYRUS PROBOSCIROSTRIS.

*Mormyrus proboscirostris*, Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 16, pl. viii. fig. 2.

Depth of body  $4\frac{1}{4}$  times in total length, length of head  $3\frac{3}{4}$ .

Upper profile of head descending in a curve; snout much produced, trunk-like, a little longer than the postocular part of the head, its head  $4\frac{1}{2}$  times its least depth; mouth very small, lower jaw slightly projecting, with thick lips; teeth very small, notched, 5 in the upper jaw, 12 in the lower; eye small, its diameter  $7\frac{1}{2}$  times in length of snout, 2 in interorbital width. Dorsal 75, originating in advance of base of ventral, nearly 5 times as long as anal,  $1\frac{1}{3}$  as long as its distance from the end of the snout. Anal 19, originating at equal distance from the base of the pectoral and that of the caudal. Pectoral obtusely pointed, nearly  $\frac{1}{2}$  length of head, ventral  $\frac{1}{3}$ . Caudal densely scaled, with rounded lobes. Caudal peduncle  $1\frac{1}{2}$  as long as deep, less than  $\frac{1}{3}$  length of head. 95 scales in the lateral line,  $\frac{21}{28}$  in a transverse series on the body, 32 in a transverse series between dorsal and anal, 18 round caudal peduncle. Pink, with a broad bluish-grey stripe extending along each side of the body and tail.

Total length 570 millim.

Upper Congo.

#### 14. MORMYRUS TENUIROSTRIS.

*Mormyrus tenuirostris*, Peters, Sitzb. Ges. naturf. Fr. Berl. 1882, p. 73.

Depth of body 5 times in total length, length of head  $3\frac{1}{3}$ . Snout thin, produced, curved downwards; eye in the middle of the head; teeth bicuspid. Dorsal 60, originating further back than base of ventrals, not longer than its distance from the middle of the snout. Anal 20.

Total length 125 millim.

Adi River, Ukamba, East Africa.—Type in Berlin Museum.

#### 9. HYPEROPISUS.

*Hyperopisus*, Gill, Proc. Ac. Philad. 1862, p. 443; Günth. Cat. vi. p. 222 (1866); Bouleng. Ann. Mus. Congo, Zool. i. 1898, p. 2.

*Phagrus*, Marcusen, Mém. Ac. St. Pétersb. (7) vii. 1864, no. 4, p. 111.

Teeth in jaws small, notched, few (3–5 in the upper jaw, 5–6 in the lower); parasphenoid and tongue with a pavement of large spheroid teeth; mouth terminal, below the level of the eyes. Nostrils moderately far apart, remote from the eye. Body elongate; ventrals much nearer pectorals than anal. Dorsal very short (12–15 rays); anal very long. Vertebrae 55–59 (15–16 + 4–6 + 35–38).

##### 1. HYPEROPISUS BEBE.

Sonnini, Voy. Égypte, pl. xxi. fig. 3 (1799).

*Mormyrus bebe*, Lacép. Hist. Poiss. v. p. 619 (1803).

*Mormyrus dorsalis*, Geoffr. Descr. Égypte, Poiss. p. 276, pl. viii. figs. 1 & 2 (1829); Cuv. & Val. xix. p. 271 (1846).

*Phagrus dorsalis*, Marcus. l. c. p. 142.